MITSUBISHI

TIME LAPSE VIDEO CASSETTE RECORDER
INSTALLATION AND OPERATION MANUAL

MODEL

HS-S5600EA
HS-S5600E(B)A
HS-S5600E(RS)A
HS-S5600E(BRS)A

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S-VHS VHS PAL 625

THIS VIDEO CASSETTE RECORDER IS BASED ON THE S-VHS FORMAT. ONLY VIDEO CASSETTE TAPES WITH THE S-VHS OR VHS MARK MAY BE USED WITH THIS MODEL.

THIS INSTRUCTION MANUAL IS IMPORTANT TO YOU. PLEASE READ IT BEFORE USING YOUR VIDEO CASSETTE RECORDER.

CAUTION AND CARE

CONDENSATION IS THE ENEMY OF VIDEO RECORDERS

■ WHAT IS CONDENSATION?

1. When a very cold drink is poured into a glass, the water droplets which form on the outer surface of the glass are an example of condensation.
2. If the VCR is exposed to a rapid increase in temperature (such as warming a cold room or after transporting it from a cold location to a warm one) condensation may form on the tape transport mechanism inside the VCR. This VCR is equipped with a heating circuit to dry up the moisture and prevent damage to the VCR or video tape from condensation. To activate the heater, plug the VCR in and switch the VCR POWER to ON. Leave the VCR on for at least 2 hours before using it for record or playback.

■ CONDENSATION IS LIKELY TO OCCUR WHEN:

1. The VCR is moved inside from outdoors, or from a cold room to a warm one.
2. A cold room is heated quickly.
3. Humidity is high.

■ DO NOT USE THE VCR UNDER ANY OF THESE CONDITIONS. LEAVE THE VCR POWER TURNED ON FOR ABOUT 1 HOUR, CHECK THAT THE INDICATION OF DEW IS NOT DISPLAYED AND THEN USE THE VCR.

NOTE:

- Avoid using the VCR where cold air (e.g., from an air conditioner) will blow directly on it.
- Never place anything containing water on top of the VCR, e.g., vases, cups, etc.

HEAVY OBJECT SHOULD NEVER BE PLACED ON THE VCR (E.G., TV)

NEVER TOUCH OR INSERT ANY OBJECT INSIDE THE VCR

Touching the inside of the cabinet or inserting foreign objects of any kind not only creates a safety hazard but can also cause extensive damage.

PROTECT THE MAINS LEAD

Damage to the mains lead may cause fire or shock hazard. When unplugged, hold by the plug only and pull out carefully.

UNPLUG THE MAINS LEAD DURING A LONG ABSENCE

Turn off the power and unplug the mains lead during a long absence.

MAINTAIN GOOD VENTILATION

Do not obstruct the many ventilation holes on the VCR. For maximum ventilation, place the unit on a hard level surface only, and ensure it is not covered during use. Heavy objects should never be placed on the VCR.

WHEN NOT IN USE

When you finish operating the VCR always unload the cassette and turn OFF the VCR POWER.

CABINET CARE

Never use petroleum-based cleaners. Clean with a soft cloth moistened with soap and water and wipe dry. PVC cables or leads should not be left in contact with the cabinet surface for long periods.

INSTALLATION LOCATION

For excellent performance and lasting reliability install in location that is:—

1. Well ventilated, out of direct sunlight and away from direct heat.
2. A solid vibration-free surface.
3. Free from high humidity, excessive dust and away from magnetic fields.

NOTE:

- Never move the VCR without first removing the tape.

CARE OF THE VIDEO CASSETTE TAPE

- Avoid violent vibration or shock.
- Do not place near a strong magnetic field (e.g., a motor, transformer or magnet).
- Never place or store in direct sunlight.
- Avoid dusty places.
- Place the cassette in its case and store vertically.
- Never store tape in high humidity.

For U.K. model only

■ MAINS LEAD CONNECTION

The wires in the mains lead are coloured in accordance with the following code:
Green-and-yellow: Earth,
Blue: Neutral,
Brown: Live
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

- The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured green or green-and-yellow.
- The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

This equipment must be protected by a 3 amp. Fuse either in the Plug, Adapter or Distribution Board.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
THIS APPARATUS MUST BE EARTHED.

THIS UNIT IS PRODUCED TO COMPLY WITH DIRECTIVE 76/889/EEC, 82/499/ECC AND 87/308/EEC, CISPR PUB. 14 AND STANDARD IEC 65.

FEATURES

Up to 960 hours of recording:
an ideal video system for automated security and surveillance systems.

This time lapse VCR is designed especially for industrial, educational and security recording. In addition to ordinary 3-hour modes, it has time lapse modes that allows recording of 12, 24, 48, 60, 72, 96, 120, 144, 168, 204, 240, 288, 336, 360, 480, 600, 720 and 960 hours. Also, the recording mode can be extended up to 21,600 hour mode available if your choice should be one-shot recording with the recording duration 3 min. Field-by-field playback and high-speed playback of longer recordings are also available. This adds up to a powerful surveillance system for banks, buildings, traffic and parking lots, as well as a convenient scientific tool for observation of plant growth, animal behaviour and other time-intensive processes.

Audio recording (up to 24 hour mode)
When recording in 3H, L(linear)12H, or L24H recording mode, you can get an audio playback in respecitive modes.

High-resolution stills with S-VHS
The system's S-VHS format creates high-resolution (400-line) pictures in monochrome and color, which makes a striking difference with still images. Field-by-field recording makes for clear, detailed images.

Tape remain indicator
The bar indication of empty sign signal output can announce to you how much a tape is left and/or that the tape has approximately 3 minutes (in the 3H mode) left.

Automatic head clog detection and cleaning
For continuous smooth operation, the VCR automatically detect and clean up a foreign matter while recording, simultaneously sensing the output from the video heads.

Easy setup using the monitor
The on-screen menus simplify setting-up procedures. These menus can still be selected even without a video input signal.

Easy cueing with alarm recording
Index signals are added automatically at the beginning of "alarm recording" for easy cueing. You can even use the monitor to confirm starting time on your recording.

Time/date search system
Inputting the information of day and time, you will get the image on tape you want accurately.

External time clock adjustment
The on-screen time clock can be reset to the nearest hour, by applying a signal to the RESET IN terminal.

Recording check function
Correct recording can be confirmed at one touch.

Automatic azimuth head selection
The VCR can automatically select the heads suitable for playing back the tape which is not VHS compatible.

Power supply for external alarm sensor
A power supply terminal (DC12V, 0.1A) for external alarm sensor is provided.

Full lock mode
Locking each setting prevents the VCR from operating abnormally or being operated by a third party.

Special playback features
These include still images, speed search, reverse playback, field-by-field viewing in both directions, and slow-motion and high-speed viewing, with quick shifts to playback while cueing.

Recording options for varied needs
This verstile system offers a variety of recording options including daily and weekly timed recording, repeat and alarm recording.

Protection against power failures
Recording data, including date, time and timer setup, are stored in back-up memory, so the system can resume recording after a power failure. The time of the failure is displayed on the monitor.

Digital <ELAPSED TIME> display
The Elapsed time of recording and playback is stored in non-volatile memory IC. The digital display is used as guideline for exchange of the head.

Connection with a personal computer
(For HS-S5600E(RS)A and HS-S5600E(BRS)A only)
When connecting with a personal computer equippedwith RS-232C connector, you can operate this VCR by remote control or control this VCR automatically.

LOCK SWITCH

A lock switch i s included to prevent unauthorized operation. Insert the key supplied with the VCR into the lock switch, press the key while turning it a quarter turn to the right. This disables the operator buttons and locks the machine in its current mode. The lock function has two operation modes and the modes can be switched using USER SELECTION 3 in On-screen menus. To unlock the machine, return the key to the original vertical position.

	ON	• Locked in current mode setting. Operator buttons cannot function.
	OFF	• All operator buttons can function.

■ A LOCK MODE SELECTION IN USER SELECTION 3
Select the lock mode A or B in USER SELECTION 3. (The selected mode is illuninated on the fluorescent display.)
A mode: The mode of all operation buttons on the VCR can't operate except RESET button.
B mode: The mode of all operation buttons on the VCR can't operate except RESET, REC and EJECT button.

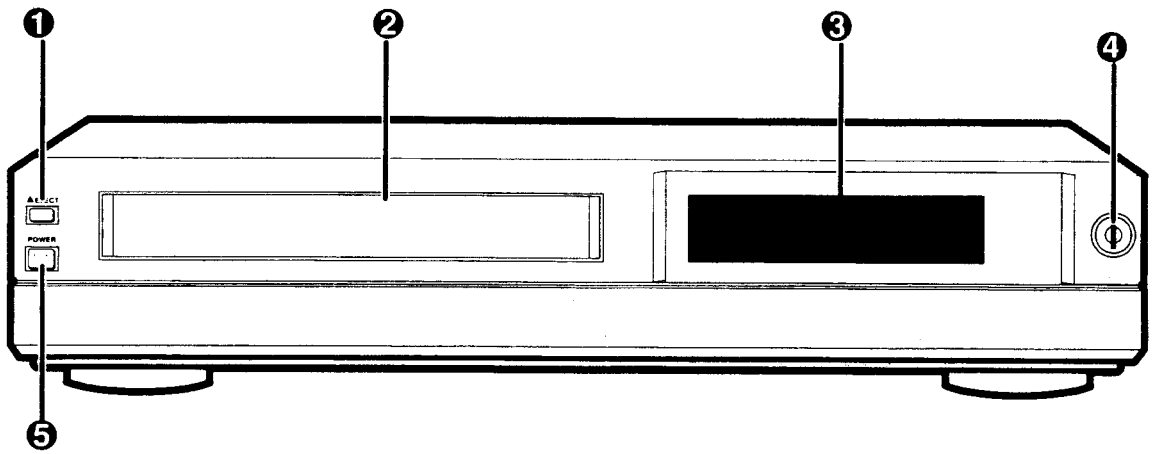
NOTE:
• If the key is lost, please contact your supplier.

ACCESSORY

• BATTERY (CR2025) • LOCK KEY (2)
• S-VIDEO CABLE

CONTROLS AND COMPONENTS

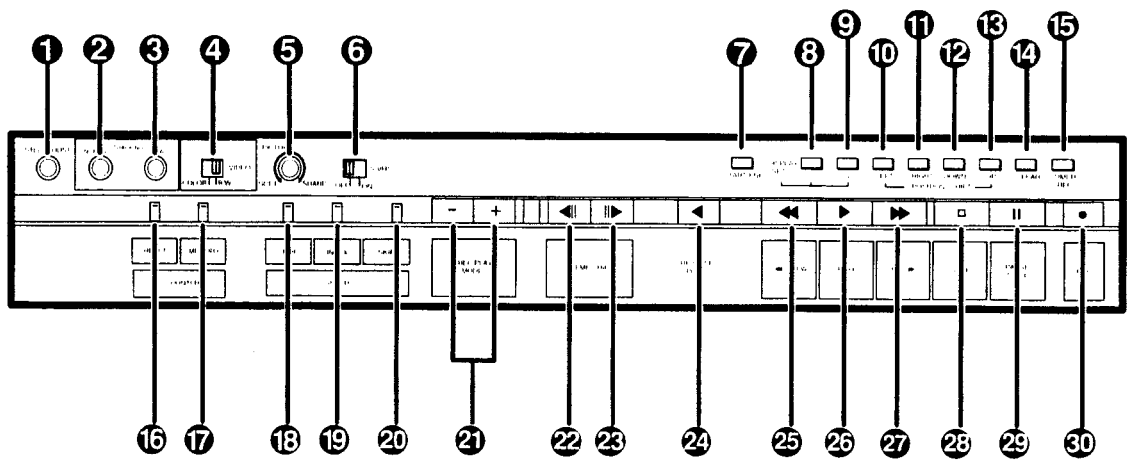
FRONT VIEW



❶ EJECT button
❷ Cassette loading slot
❸ Fluorescent display
❹ Lock switch
❺ POWER button (with indicator)

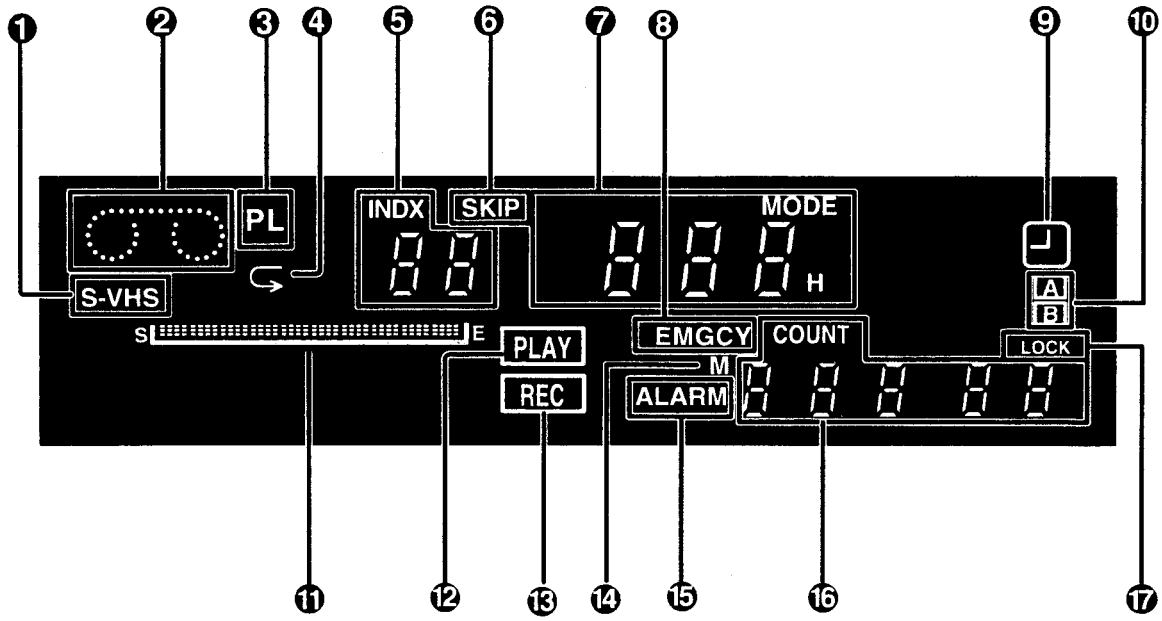
• The POWER indicator illuminates power to VCR on.

CONTROL PANEL



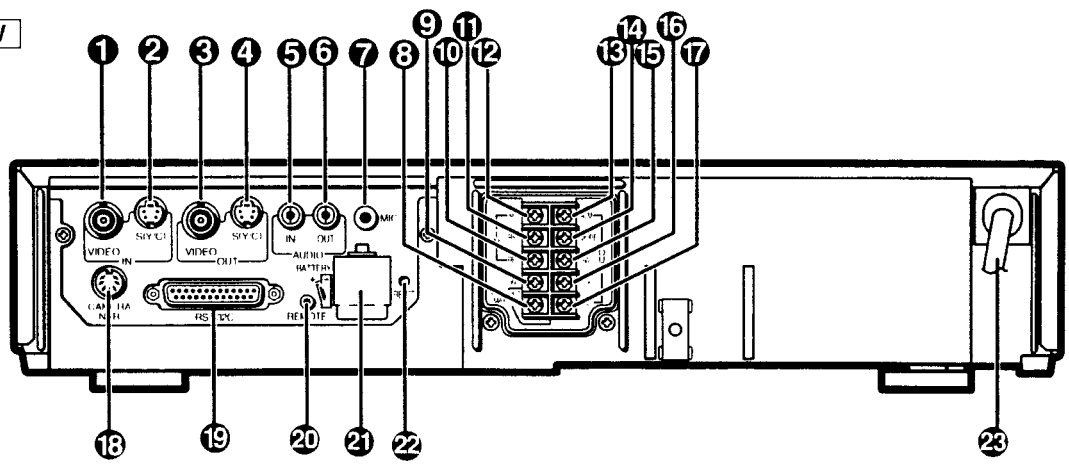
❶ STILL ADJUST control
❷ NORMAL TRACKING control
❸ SLOW TRACKING control
❹ VIDEO switch
❺ PICTURE control
❻ S-VHS switch
❼ START/END button
❽ (-) DISPLAY/SET button
❾ (+) DISPLAY/SET button
❿ LEFT POSITION/SHIFT button
⓫ RIGHT POSITION/SHIFT button
⓬ DOWN POSITION/SHIFT button
⓭ UP POSITION/SHIFT button
⓮ CLEAR button
⓯ TIMER REC button
⓰ COUNTER RESET button
⓱ COUNTER MEMORY button
⓲ TIME SEARCH button
⓳ INDEX SEARCH button
⓴ SKIP SEARCH button
㉑ REC/PLAY MODE buttons
㉒ REVERSE FRAME SHIFT button
㉓ FORWARD FRAME SHIFT button
㉔ REVERSE PLAY button
㉕ REW button
㉖ PLAY button
㉗ FF button
㉘ STOP button
㉙ PAUSE/STILL button
㉚ REC button

FLUORESCENT DISPLAY



❶ S-VHS indicator
❷ CASSETTE STATUS indicator
❸ PL (POWER LOSS) indicator
❹ REPEAT indicator
❺ INDX (INDEX) indicator
❻ SKIP indicator
❼ Recording and playing back mode display
❽ EMGCY (EMERGENCY REC) indicator
❾ TIMER REC indicator
❿ LOCK MODE indicators
⓫ TAPE REMAINS indicator
⓬ PLAY indicator
⓭ REC indicator
⓮ M (COUNTER MEMORY) indicator
⓯ ALARM indicator
⓰ COUNTER display
⓱ LOCK indicators

REAR VIEW



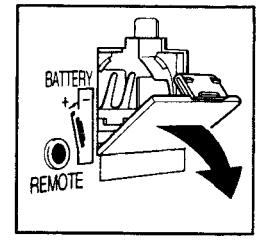
❶ VIDEO IN connector
❷ S-VIDEO IN connector
❸ VIDEO OUT connector
❹ S-VIDEO OUT connector
❺ AUDIO IN connector
❻ AUDIO OUT connector
❼ MIC IN jack
❽ DC 12V OUT terminal
(for DC 12V power supply for a sensor, etc.)
❾ GND (GROUND) terminal
❿ REC IN terminal
⓫ RST (RESET) IN terminal
⓬ SET IN terminal
⓭ ALM (ALARM) OUT terminal
⓮ MODE OUT terminal
⓯ SW (SWITCH) OUT terminal
⓰ CLOCK OUT terminal
⓱ CALL OUT terminal
⓲ CAMERA NBR (NUMBER) IN connector
⓳ RS-232C terminal (For HS-S5600E(RS)A and HS-S5600E(BRS)A only)
⓴ REMOTE IN jack
㉑ Clock battery compartment
㉒ RESET button
㉓ AC mains lead

NOTE:
The VCR may function abnormally if you connect the rear terminals with the Mains Lead plugged in. Make sure to connect them after unplugging the Mains Lead.

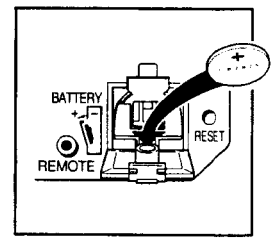
INSTALLING A CLOCK BATTERY

Power for memory of day and present time, alarm recording list and power loss list is supplied by a lithium battery.
Before using this unit install the battery as follows:

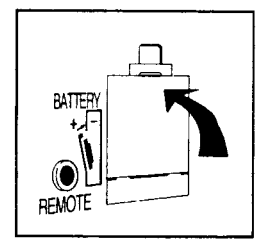
1 After plugging in the VCR, open the cover of the clock battery compartment on the rear panel.



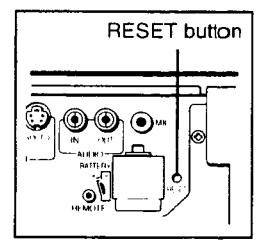
2 Install the battery with the (+) side facing out.
- Insert the battery into its holder until it snaps into place.



3 Close the cover.



4 Press the RESET button on the rear panel.



TO REMOVE THE BATTERY
Use a sharp object to pry the battery out of the holder.

NOTE:
- Install the battery with the VCR plugged in.
- Be sure to observe the correct polarity while installing the battery.
- Please use CR2025 lithium battery. Although battery life is approximately 1 year, we suggest that it should be changed after 10 months.
- Dispose of used battery properly.
- Keep away from children.
- Do not disassemble or burn the battery.
- Do not press the RESET button on the rear panel with the battery installed and the VCR unplugged. Pressing the RESET button with the VCR unplugged will shorten the battery's life. Should the RESET button be pressed in this condition, plug in the VCR and then press the RESET button again.

CAUTION:
- If the installed battery is dead or a battery has been installed incorrectly, the built-in clock and power loss listing does not function.

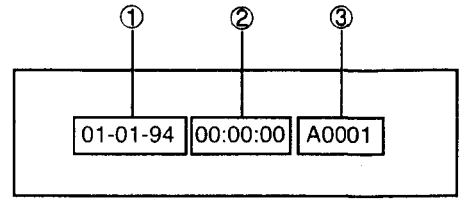
WARNING:
- The battery used in this device may present a fire or chemical burn hazard if mistreated.
  Do not recharge, disassemble, heat above 100°C or incinerate. Replace battery with Panasonic CR2025.
  Use of another battery may present a risk of fire or explosion.

SETTING THE PRESENT TIME

ACCURATELY PRE-SET THE DAY AND PRESENT TIME BEFORE TIMER PROGRAMMING

<Display mode 1>
① Day-Month-Year
② Hour:Minute:Second
③ Alarm recording number

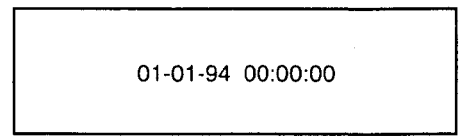
<Display mode 1>



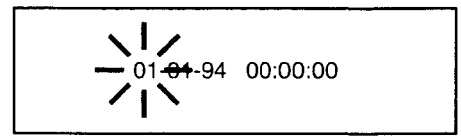
- A 24-hour display is used. 00:00 indicates midnight; 12:00 midday and 15:00 3 o'clock in the afternoon.
- The alarm recording number is shown during alarm recording.

1 Set the display mode of the display selection menu to "1" or "2".
- In the display mode "3", it is impossible to set the day and the present time. Refer to "DISPLAY SELECTION" on page 10.

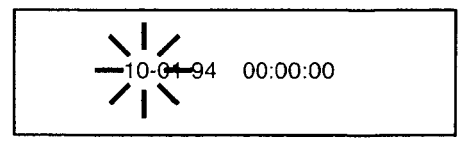
2 Press the DISPLAY/SET buttons to show day and present time display on the monitor.
- When the VCR is turned on, day and present time display is shown on the monitor without pressing the DISPLAY/SET button.



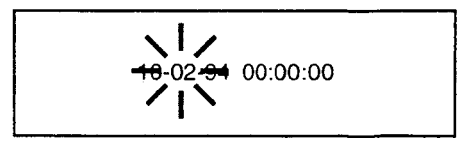
3 Press the START/END button.
("Day" display flashes.)



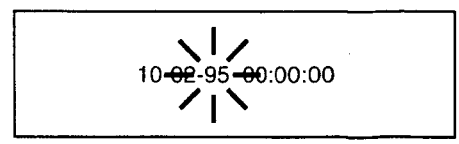
4 **Setting the day**
Press the DISPLAY/SET buttons to set the day.



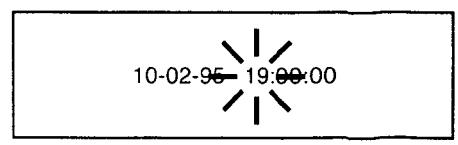
5 **Setting the month**
Press the RIGHT POSITION/SHIFT button to flash the "Month" display.
Press the DISPLAY/SET buttons to set the month.



6 **Setting the year**
Press the RIGHT POSITION/SHIFT button to flash the "Year" display.
Press the DISPLAY/SET buttons to set the year.
- The year digits can be set to 1994-2024.



7 **Setting the present time**
Press the RIGHT POSITION/SHIFT button to flash the hour digits of "Present time" display. Press the DISPLAY/SET buttons to set the hour digits of the present time.
- If necessary, similarly set the 10 minutes digits and minute digit.
- When the POSITION/SHIFT button is pressed, the flashing display moves.



8 Press the START/END button.
(Flashing display stops.)

NOTE:
- The flashing of the display automatically stops after 3 minutes after pressing the POSITION/SHIFT or DISPLAY/SET button.
- If the display continues to flash, the clock will not advance. Press the START/END button and confirm that the display has stopped flashing.
- The POWER button can not operate when the display continues to flash.

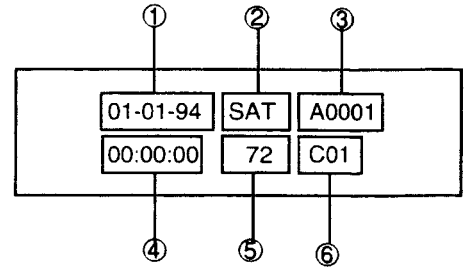
■ SETTING THE PRESENT TIME TO THE EXACT SECOND
Set the clock as described above, but set the minutes one or two minutes ahead of the reference time being used. When the reference time reaches 00 seconds of the minute you have chosen, press the START/END button. The VCR time now corresponds to the reference time to the nearest second.

<Display mode 2>
In the display mode 2, it is also possible to set the day and present time.

① Day-Month-Year
② A Day of week
③ Alarm recording number
④ Hour:Minute:Second
⑤ Recording mode
⑥ Camera number

- A 24-hour display is used. 00:00 indicates midnight; 12:00 midday and 15:00 3 o'clock in the afternoon.
- The day of the week automatically sets.
- The alarm recording number display is shown during alarm recording.
- The camera number display is shown when the cable is connected to the CAMERA NBR IN terminal.

<Display mode 2>



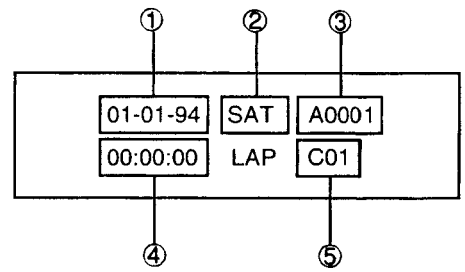
STOP WATCH DISPLAY

<Display mode 3>
This lap time can be displayed when the display mode is set to "3" in the display selection menu. Refer to "DISPLAY SELECTION" on page 10.

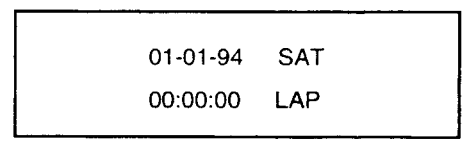
① Day-Month-Year
② A Day of week
③ Alarm recording number
④ Hour:Minute:Second
⑤ Camera number

- "Hour" display of stop watch is shown from 00 to 23.
- The camera number display is shown when the cable is connected to the CAMERA NBR IN terminal.
- The alarm recording number display is shown during alarm recording.

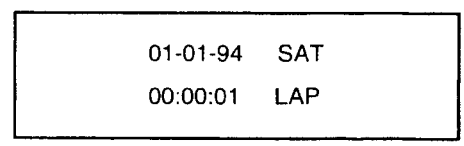
<Display mode 3>



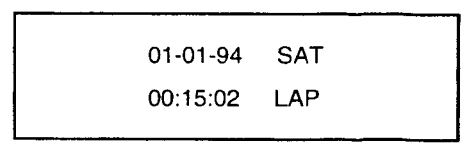
[1] Press the DISPLAY/SET button to show the stop watch display.



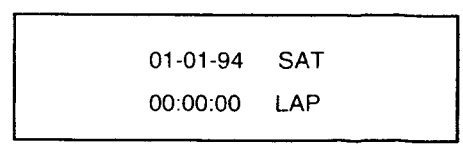
[2] Press the START/END button.
The stop watch starts to count up.



[3] Press the START/END button again to stop the stop watch.



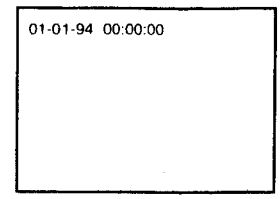
[4] Press the CLEAR button to reset the counter.



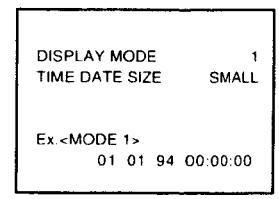
ON-SCREEN MENUS

When the VCR is turned on, day and time display will appear on the connected monitor. First, set the day and present time. After that, set each item of the following on-screen menus. The on-screen menus for setting the conditions of recording and the VCR are shown below:

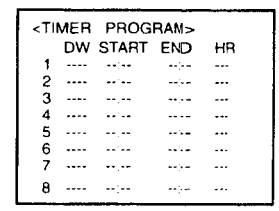
❶ DAY AND PRESENT TIME / STOP WATCH
Displays day and present time or stop watch display. The display format can be selected among 5 display modes in the following display selection menu.



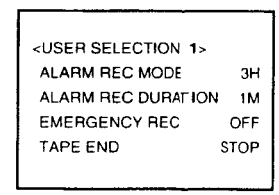
❷ DISPLAY SELECTION (page 10)
Sets the display format and the character size.



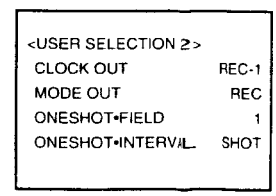
❸ TIMER PROGRAMME (page 17)
Set the day of the week, start/end time, and recording mode for timer recording. A maximum of eight programmes can be made.



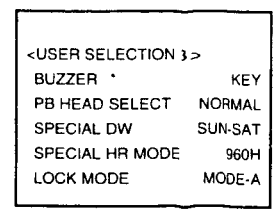
❹ USER SELECTION 1 (page 11)
Set each mode for alarm recording, emergency recording, and the condition of tape when the tape end is reached.



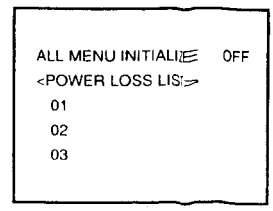
❺ USER SELECTION 2 (page 11)
Set each mode for clock out, mode out and one-shot recording.



❻ USER SELECTION 3 (page 12)
Set each mode for buzzer, heads for playback, special setting for timer recording, and lock mode.



❼ INITIALIZATION SELECTION AND POWER LOSS LIST (page 12)
Set "ALL MENU INITIALIZE" to ON to reset all the set menu. Then, "PUSH CLEAR KEY THEN ALL MENU INITIALIZED." appears on the monitor. Press the CLEAR key for initialization. Power failure start times are stored in memory. Up to 3 start times for power failure will be displayed. For more than that, the first and last 2 start times will be displayed.

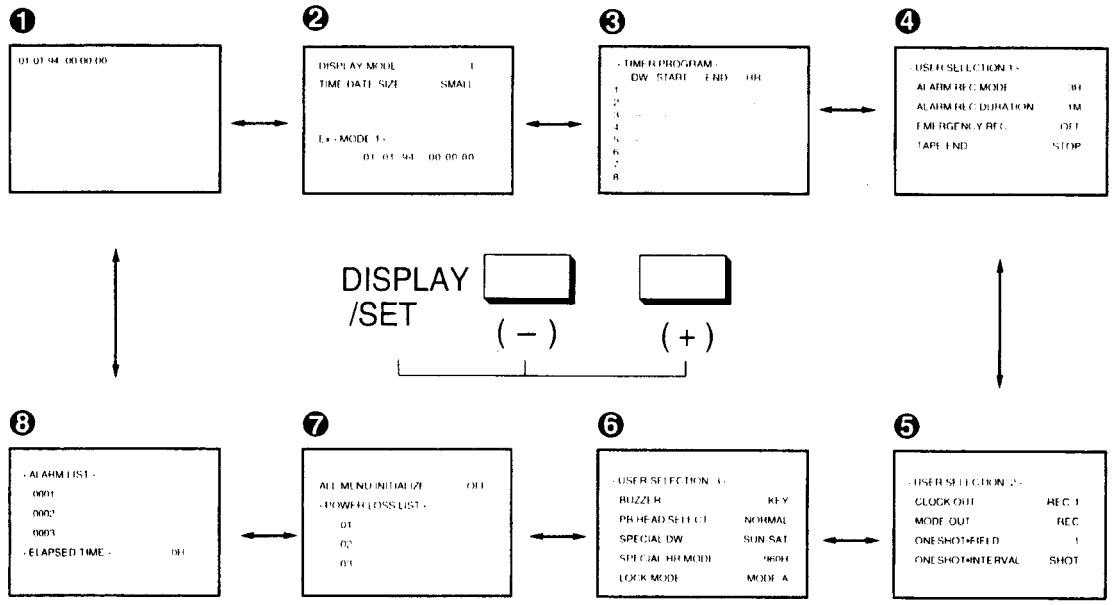


❽ ALARM RECORDING LIST / ELAPSED TIME

The alarm record times are stored in memory. Up to 3 start times for alarm record will be displayed. For more than that, the first and last 2 start times will be displayed. The elapsed time of recording and playback is also stored in memory. The digital display is used as a guide line for exchange of the head.

<ALARM LIST>
0001
0002
0003
<ELAPSED TIME> 0H

The on-screen menus are displayed each time the (+) or (-) DISPLAY/SET button is pressed.
When the (+) button is pressed, each display appears in the order of ❶ - ❽.
When the (-) button is pressed, each display appears in the order of ❽ - ❶.



POSITION/SHIFT buttons

Pressing the POSITION/SHIFT buttons allows menu items to be selected up and down the screen. The selected item flashes whilst the required mode is being set. Pressing the POSITION/SHIFT buttons with day and present time display (not flashing) on the screen will move the position of the display.

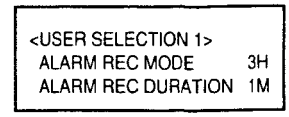
RESET button

When this VCR is not properly operated or in case of an abnormal display, press the RESET button located on the rear panel using a pencil or a ballpoint pen. This will cut the power, erase previous settings (day and present time, alarm recording/power loss list, counter display, and recording/playback mode) and return the machine to the original starting up condition. When the condition is restored, reset the current time, then set the recording/playback mode, etc. once again.
Do not press the RESET button with the battery installed and the VCR unplugged. Pressing the RESET button with the VCR unplugged will shorten the battery's life. Should the RESET button be pressed in this condition, plug in the VCR and then press the RESET button again.

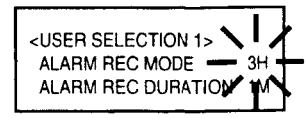
SETTING THE MENUS

To operate the VCR with the on-screen display shown on the monitor:

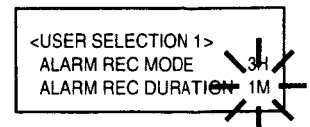
1 Press the DISPLAY/SET buttons to show the on-screen display on the monitor.



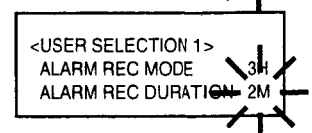
2 Press the START/END button.



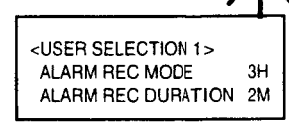
3 Press the DOWN POSITION/SHIFT button to select the desired item.



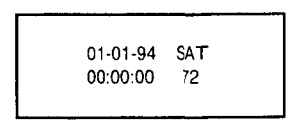
4 Press the DISPLAY/SET buttons to select the desired mode.



5 Press the START/END button.



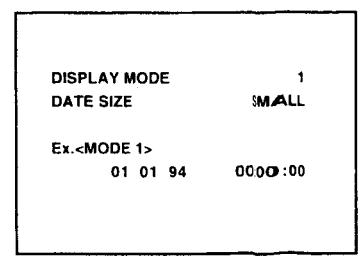
6 Press the DISPLAY/SET buttons to show day and present time on the monitor.



DISPLAY SELECTION

1 SETTING DISPLAY MODE

DISPLAY MODE 1: Displays date, and present time.
DISPLAY MODE 2: Displays date, day of the week, present time, recording mode.
DISPLAY MODE 3: Displays date, day of the week and stop watch.
DISPLAY MODE 4: Displays nothing; In case of alarm recording, date, alarm recording number, etc. is displayed.
DISPLAY MODE 5: Displays nothing; Even in case of alarm recording, nothing is displayed on the monitor.

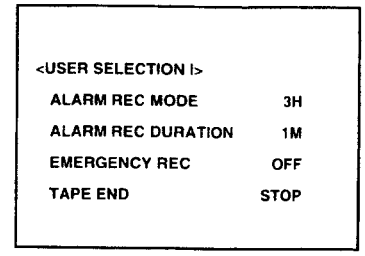


- When an alarm recording begins, the date, day of the week, present time, recording mode, alarm recording number and camera number is displayed in spite of the selected display mode. However, in the display mode 1, day of the week and camera numbers are not displayed during an alarm recording.

2 SETTING THE SIZE OF THE LETTERS OF DAY AND PRESENT TIME DISPLAY

SMALL: The size of the letters becomes small.
LARGE: The size of the letters becomes large.

USER SELECTION 1



1 SETTING THE ALARM RECORDING TIME MODE

Sets the alarm recording time mode. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of 3H → L12H → L24H → 3H → ....

2 SETTING THE ALARM RECORDING PERIOD

Sets the duration of the alarm recording period. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of 1M(minute) → 2M → 5M → 10M → MAN1 → MAN2 → 15S(second) → 30S → 45S → 1M → .... Refer to "ALARM RECORDING" on page 19.

3 SETTING THE EMERGENCY RECORDING

Sets the emergency recording mode.

OFF: Starts alarm recording when the alarm signal is entered during recording.

ON: Starts alarm recording when the alarm signal is entered not only during recording but also when the power is OFF or when the tape is stopped.

4 SETTING THE OPERATION AT THE TAPE END

Sets the operation of the VCR when the tape runs out during the recording.

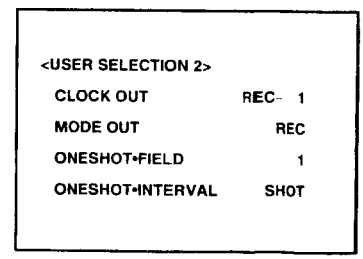
STOP: The tape stops, the indications "End" and "TAPE END" appear on the fluorescent display and on the screen respectively, and the buzzer sounds if the "BUZZER" is set to "WRNG" in the user selection display. Outputs the CALL signal at the tape end.

REWIND: Rewinds the tape to the beginning and stops. (Except during timer recording.) Outputs the CALL signal for 2 seconds at the tape end.

REPEAT: Rewinds the tape to the beginning and resumes the recording.

ALARM•PROT(ALARM PROTECTION):
If any alarm recording are present on the tape then the tape stops, the indications "End" and "TAPE END" appear on the fluorescent display and on the screen respectively, and the buzzer sounds if the "BUZZER" is set to "WRNG" in the user selection display. Outputs the CALL siganl at the tape end. If the tape is rewound, recording can resume.

USER SELECTION 2



1 SETTING THE FREQUENCY DIVISION RATIO

Sets the frequency division ratio of clock pulse output from the CLOCK OUT terminal. First, set the recording mode available for clock pulse output. When recording in time lapse mode (12H-960H), set the mode to "T/L-REC". When recording in any mode (3H-960H), set the mode to "REC". Second, set the frequency division ratio. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of 1 → 2 → 3 → 4 → 5 → 10 → 15 → 20 → 25 → 30 → 50 → 60 → F (field) → 1 → ....

The numbers 1 to 60 indicate the number of frames in the continuous recording mode or the number of fields in time lapse recording mode. (One frame consists of two fields.) One field is selected when it is set to "F" (field).

2 SETTING THE OPERATION MODE OF THE MODE OUTPUT

Sets the state in which the signal output at the MODE OUT terminal is switched to the active condition.

EMPTY: When a tape has approximately 3 minutes left in the 3H mode.

REC(recording): During recording.

PLAY(playback): During playback.

POWER(power "ON"): When the VCR is turned on.

TAPE: When the tape is loaded in the VCR.

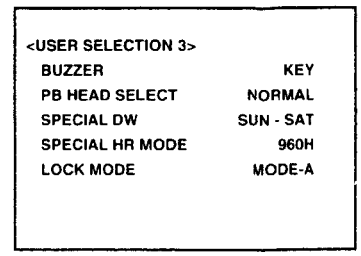
3 SETTING THE NUMBER OF FIELDS IN ONESHOT RECORDING

Sets the number of recorded fields in the one shot recording mode. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of 1 → 2 → 3 → 4 → 5 → 10 → 20 → 30 → 1 → ....

4 SETTING THE INTERVAL TIME IN ONESHOT RECORDING

Sets the interval time in the one shot recording mode. When the (+) button is pressed, the display will be switched in the order of SHOT → 10S → 15S → 30S → 45S → 1M → 2M → 3M → SHOT → ....

USER SELECTION 3



1 SETTING THE BUZZER ON/OFF

KEY: The buzzer sounds when any key is pressed.
WRNG: The buzzer sounds when there is any malfunction in the VCR.
OFF: The buzzer does not sound.
EMPTY: The buzzer sounds when a tape has approximately 3 minutes left in the 3H mode.

2 SETTING THE HEADS FOR PLAYBACK

Sets the heads for playback. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of NORMAL → L/L(LEFT/LEFT) → R/R(RIGHT/RIGHT) → AUTO → NORMAL → ....

- This VCR is equipped with two pairs of heads. If you play back the tape recorded by another VCR, set the heads for playback to AUTO, L/L, or R/R. With the selected heads, the tape may be played back correctly. After playing back with the setting at "L/L", "R/R", or "AUTO", return the setting to "NORMAL".

3 SETTING RECORDING PERIOD IN TIMER RECORDING BY SPECIFYING THE DAYS OF THE WEEK

Sets the recording period in timer recording by specifying the start and end day of the week for timer recording. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of MON → TUE → ... → SAT → SUN → MON → .... When the DOWN SHIFT button is pressed, the end day of the week is selected. So, set the end day of the week, too.

- It is impossible to set two days of the week to the same day.

4 SETTING THE SPECIAL HOUR MODE IN RECORDING

Sets the special hour mode in recording. The set hour mode can be selected in normal recording, playback and timer recording. When the (+) DISPLAY/SET button is pressed, the display will be switched in the order of 960H → 60H → 96H → 144H → 204H → 288H → 336H → 600H → 720H → 960H → ....

5 SETTING THE LOCK MODE (LOCK MODE)

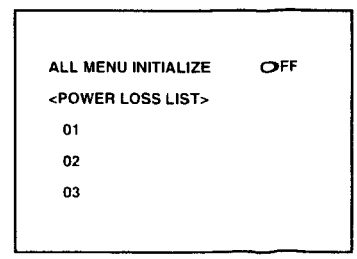
Sets the lock mode. When the DISPLAY/SET button is pressed, the display will be switched in the order of MODE-A → MODE-B → MODE-A....
When the lock key on the front panel is turned a quater turn to the right, the lock mode is set.

MODE-A: The mode of all operation buttons on the VCR can't operate except RESET button.
MODE-B: The mode of all operation buttons on the VCR can't operate except RESET, REC and EJECT button.

OTHER SELECTION

INITIALIZE THE SETTING OF DISPLAY SELECT AND USER SELECTIONS

Press the DISPLAY/SET button to set to ON. Then, the message "PUSH CLEAR KEY THEN ALL MENU INITIALIZED." appears. Press the CLEAR button in this condition to initialize the settings of on-screen displays.



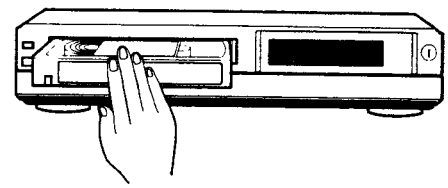
LOADING AND UNLOADING THE CASSETTE TAPE

Video cassette tapes can be loaded into your new VCR as long as the VCR is plugged into a power source. Even if the VCR power switch is turned off, loading a cassette will automatically cause it to turn on. Use only video casssette tapes marked S-VHS or VHS.

Use only standard tapes for VHS cassette tapes to ensure reliable video recording. Please do not use: Pro; Hi-Fi and High Grade or E-240 tapes as damage to recording heads may occur.

LOADING

1 To position the cassette properly before inserting it in the cassette slot, hold the cassette so that the long narrow edge with the contents label faces towards you. The other long narrow edge is hinged and should face towards the VCR. The clear plastic window that shows the video tape should face upward.



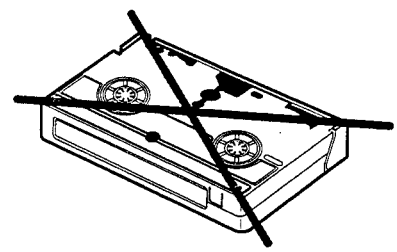
CORRECT

2 Gently insert the videotape into the cassette slot to the point that your VCR automatically retracts the cassette.

- When you insert the videotape, be sure to orient it squarely to the slot.

NOTE:

Your new VCR has a protection circuit which will eject the tape if it is loaded improperly. If the VCR ejects the tape you are trying to load, remove it completely and check that the long narrow edge with the contents label is facing towards you and that the clear plastic window that shows the video tape is facing upwards. Then try again.



INCORRECT

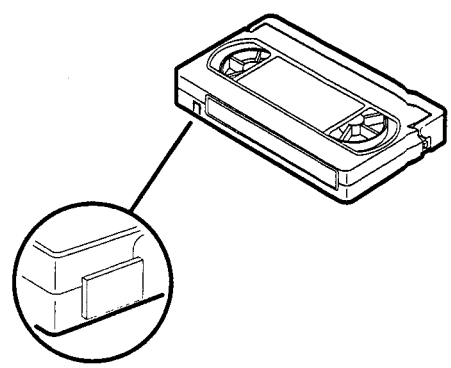
UNLOADING

1 Press the EJECT button on the front of the VCR.
2 Remove the cassette.

Your VCR will eject a video cassette even if the power to the VCR is turned off (as long as the VCR is plugged into an outlet).
When the EJECT button is pressed, the VCR will automatically turn on, eject the tape, and turn off. However, in the recording mode, it is not possible to eject a tape without first pressing STOP, from the remote or on the front panel of the VCR and then pressing EJECT.

PREVENTING ACCIDENTAL ERASURE

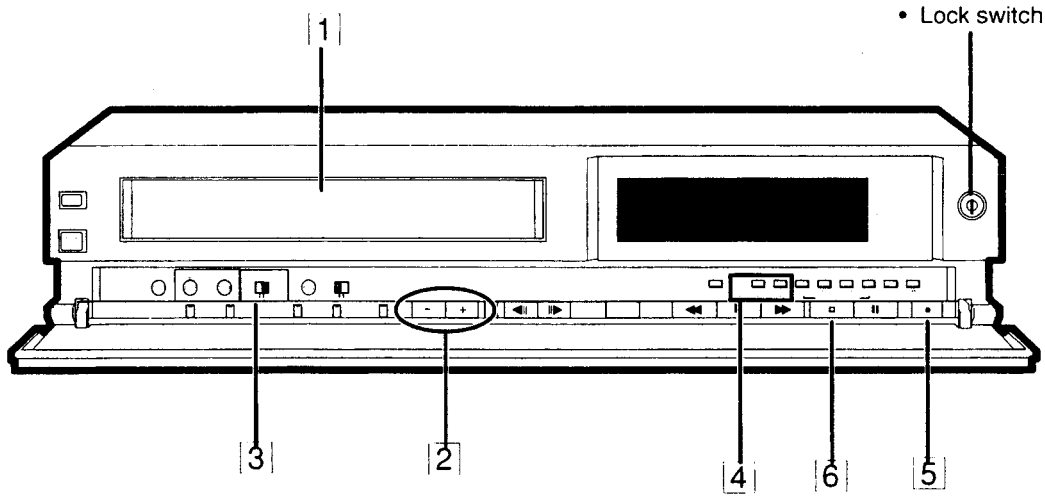
Video cassettes come with a tab which, when removed, prevents the tape's contents from being erased, or recorded over.
If the casssette you insert in your VCR has the erasure prevention tab removed, your VCR will automatically eject it if you attempt to record on it.



NOTE:

- We recommend that any torn or broken cassette tape requiring repair be taken to professionals who specialize in such procedures. The adhesives on many common types of tape could damage the head of your VCR.

MANUAL RECORDING



1 Load a cassette with the erasure prevention tab intact.
2 Press the REC/PLAY MODE buttons to select the desired recording mode.
  • To select the special hour mode, set the hour mode in the user selection 3 display in advance.
3 Select the VIDEO switch setting according to the type of image to be recorded, COLOR (COLOUR) or B/W.
  • Do not connect the colour and black & white cameras together.
4 To record the day and present time, display the day and present time on the monitor.
5 Press the REC button to begin recording.
6 Press the STOP button to stop recording.

NOTE:

- Press the PAUSE/STILL button to momentarily stop recording. Press again to resume recording.
- To protect the tape, the pause mode is automatically released after about 5 minutes.
- The REC button will not function unless the tape is in the stop or pause mode.
- If the cassette you insert in your VCR has the erasure prevention tab removed, your VCR will automatically eject it if you attempt to record on it.

■ RECORDING MODE

When the REC/PLAY MODE button is pressed, the recording mode is switched in the order of 0H → 3H → L12H → L24H → 48H → 72H→ 120H → 168H → 240H → 360H → 480H → 960H → 0H → .... (if the special hour mode is set to "960H" in the user selection display).

RECORDING CHECK FUNCTION

Correct recording can be confirmed at one touch.
Press the PLAY button for more than 3 seconds during recording, and recording pauses. Then, the tape is rewound a little and played back. When the tape reaches the original position, the VCR returns to the record mode.

AUDIO RECORDING

Either apply the specified line input signal to the AUDIO IN connector or connect the microphone to the MIC IN jack. If both are connected, the microphone is given priority.

NOTE:

- There is normal sound playback only when the tape recorded in 3H, L12H and L24H modes are played back in the respective modes.

LOCK MODE

When the lock key is turned to the right, the operation buttons will not be operated and the unit is kept in the current mode. To release the lock mode, set this switch to the original vertical position. (Refer to page 12.)

REPEAT RECORDING

When the "TAPE END" of the user selection display set to "REPEAT" or "ALARM•PROT" and the repeat recording mode is set (the REPEAT indicator is illuminated), the tape will automatically be rewound to the start after the tape end is reached and recording will start again.

■ WHEN TAPE END IS REACHED

The following functions are automatically engaged when the tape ends during recording.

	STOP	REWIND	REPEAT	ALARM•PROT
When there are alarm recordings on tape.	The tape stops and the buzzer sounds if the "BUZZER"is set to "WRNG" in the user selection display. (intermittent sound at 2 second intervals). Outputs the CALL signal at the tape end.	The tape is rewound automatically to its beginning and then stops. Outputs the CALL signal for 2 seconds at the tape end.	The tape is rewound automatically to its beginning and then the record-ing is resumed.	The tape stops and the buzzer sounds if the "BUZZER"is set to "WRNG" in the user selection display. (intermittent sound at 2 second intervals.) Outputs the CALL signal at the tape end.
When there are no alarm recordings on tape.				The tape is rewound automatically to its beginning and then the recording is resumed.

TAPE COUNTER

An illuminated digital display which provides a five digit numerical indication of the relative position on the tape.

- "EEE EE" illuminates to indicate that the VCR power is turned off.

COUNTER RESET

Press the COUNTER RESET button and the counter will be reset to "00000".

COUNTER MEMORY

When the COUNTER MEMORY button is pressed, the tape will rewind to the "00000" position of the counter and stop. (The rewind position is slightly inaccurate.)

NOTE:

- The counter display is stored in the memory when the power is turned off, so the same numbers will be displayed when the power is turned back on.

ONE-SHOT RECORDING

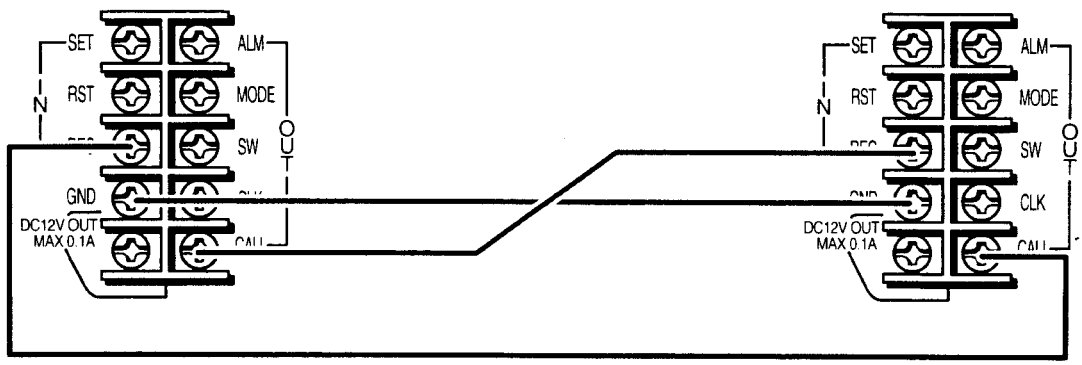
One-shot recording is possible by pressing the FORWARD FRAME SHIFT button or applying a shot signal to the REC IN terminal on the rear panel.

1 Press the REC/PLAY MODE button to set the recording mode to "0H".
2 Set the number of fields and the interval time in one-shot recording mode in the user selection display.
3 Press the REC button.

- One-shot recording starts every interval time set in th user selection display if the FORWARD FRAME SHIFT button is not pressed during the shot mode or no signal is applied to the REC IN terminals.
- Refer to "USER SELECTION 2" on page 11.

SERIES RECORDING

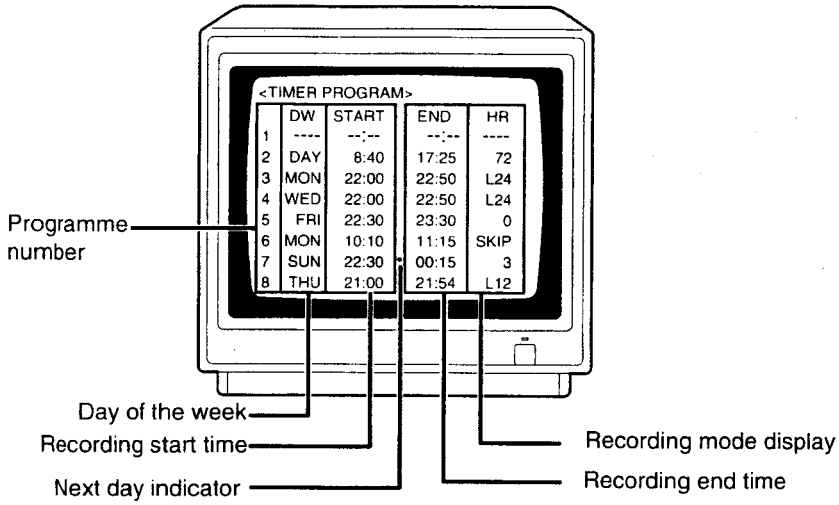
Series recording is possible if two or more of these units are connected: when the first VCR reaches the tape end, the second VCR automatically begins recording. Set the "TAPE END" of the user selection display to "STOP" or "REWIND".



NOTE:

- When an abnormality occurs (e.g., the tape end or the head clog during recording) in the first VCR, the second VCR automatically begins recording.
- Series recording will not function during timer recording.

TIMER RECORDING


<TIMER PROGRAM>
DW START END HR
1 ---- --:-- --:-- ----
2 DAY 8:40 17:25 72
3 MON 22:00 22:50 L24
4 WED 22:00 22:50 L24
5 FRI 22:30 23:30 0
6 MON 10:10 11:15 SKIP
7 SUN 22:30 00:15 3
8 THU 21:00 21:54 L12
Programme number
Day of the week
Recording start time
Next day indicator
Recording mode display
Recording end time

- "DAY" (in "Day of the week") is used for the same time recording everyday.
- "SPL" (special) (in "Day of the week") indicates that the recording period set in user selection display becomes available.
- "SKIP" (in "Hour") indicates that timer recording is not performed during the set period.
- A 24-hour display is used. 00:00 indicates midnight; 12:00 midday and 15:00 3 o'clock in the afternoon.
- If the recording times of two programmes on the same time overlap, the higher programme number is given priority.
- In 3H, L12H or L24H mode, audio is also recorded.

1 Press the DISPLAY/SET buttons to show programme setting display on the monitor.

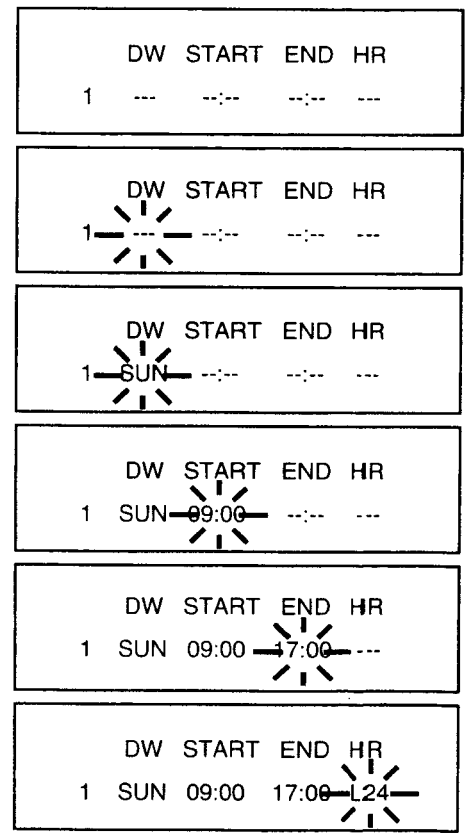
2 Press the START/END button.
(The day of the week display flashes.)

3 **Setting the day of the week (DW)**
Press the DISPLAY/SET buttons to set the day of the week.

4 **Setting the recording start time (START)**
Press the POSITION/SHIFT button to flash the recording start time display.
Press the DISPLAY/SET buttons to set the recording start time.

5 **Setting the recording end time (END)**
Press the POSITION/SHIFT button to flash the recording end time display.
Press the DISPLAY/SET buttons to set the recording end time.

6 **Setting the recording mode (HR)**
Press the POSITION/SHIFT button to flash the recording mode display.
Press the DISPLAY/SET buttons to set the recording mode.


DW START END HR
1 --- --:-- --:-- ---
DW START END HR
1 --- --:-- --:-- ---
DW START END HR
1 SUN --:-- --:-- ---
DW START END HR
1 SUN 09:00 --:-- ---
DW START END HR
1 SUN 09:00 17:00 ---
DW START END HR
1 SUN 09:00 17:00 L24

- When the POSITION/SHIFT button is pressed, the flashing display moves on to the next, and when the DISPLAY/SET button is pressed, the flashing position can be set.
- If the END time is the same or earlier than the START time, the next day indicator (•) is automatically displayed.
  This indicates that the recording will run continuously from the START time on the first day to the END time on the next day.
- When setting another program, press the DOWN POSITION/SHIFT button and repeat steps 3 - 6 . A maximum of eight programmes can be made.
- To erase the programme setting, select the programme number to be erased and press the CLEAR button.

7 Press the START/END button.
(Display stops flashing.)
If the program has not been set completely, the flashing will not stop.
8 Press the DISPLAY/SET buttons to show day and present time on the monitor.
9 Press the TIMER REC button.
(TIMER REC indicator is illuminated.)

IN ORDER TO AVOID MIS-SETTING OF THE TIMER

When any mis-setting is involved when pressing the TIMER REC button, inability to record is indicated by the following.

Symptom	Condition	Procedure
TIMER REC indicator flashes and buzzer sounds if the "BUZZER" is set to "KEY" in the user selection display.	• A tape is not inserted. • A tape with the erasure prevention tab removed is loaded. • Date, time or timer recording time is not set. • User selection display is being set.	1. Press the TIMER REC button. 2. Cancel the fault condition, as shown left. 3. Press the TIMER REC button and confirm the TIMER REC indicator (⏎) is illuminated.

■ SELECTING THE LOCK MODE "B"

During the timer recording stand-by mode, set the LOCK switch to ON with "B" mode, you can load or unload a cassette maintaining the timer recording stand-by mode.

- Press the EJECT button, and the cassette can be ejected and the buzzer rings. (Load a cassette with an erasure prevention tab to stop he buzzer.)
- A cassette with the erasure prevention tab removed will be automatically ejected.
- A cassette cannot be unloaded when the LOCK mode is set to "A".

MEMORY BACK-UP IN CASE OF POWER FAILURE

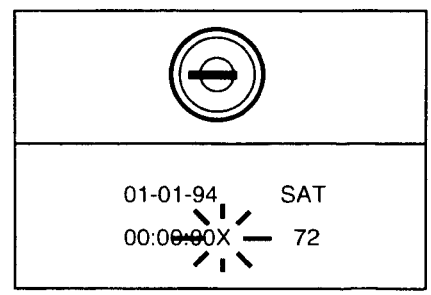
This VCR includes a built-in memory backup, so the presettings of day and present time and alarm recording/power loss list will remain in the memory even if there is a power failure or the MAINS LEAD is disconnected. (The memory backup is automatically retained if a battery is installed. The presetting will remain in the memory for 1 year after a battery is installed.)

- Settings of the timer programme and the user selections are retained even without a battery.

The time may suffer some change when the battery life is over or if a battery is not installed. It is best to check the present time if the battery life is over or if a battery is not installed correctly.

RECORDING AFTER A POWER FAILURE

If the Lock switch is set to ON when there is a power failure, the unit will be set to the recording mode when the power comes back on. If there is a power failure during timer recording or alarm recording, the unit will be set to the recording mode when the power comes back on regardless of the position. "X" will be displayed for about 1 minute next to the present time display on the monitor when the power comes back on.



POWER FAILURE TIME DISPLAY

The Power failure start time is stored in memory so it is possible to confirm the start times while recording. Press the DISPLAY/SET button to show "POWER LOSS LIST" display. Then, the power failure time list display will appear on the screen.

- Up to 3 power failure start time will be displayed. If more than 3 failures have occurred, the first and last 2 power failure start times will be displayed.
- Pressing the CLEAR button with the power failure time list display appearing on the screen will erase the Power failure time.

<POWER LOSS LIST>
01 13-02-95 02:30

ELAPSED TIME DISPLAY

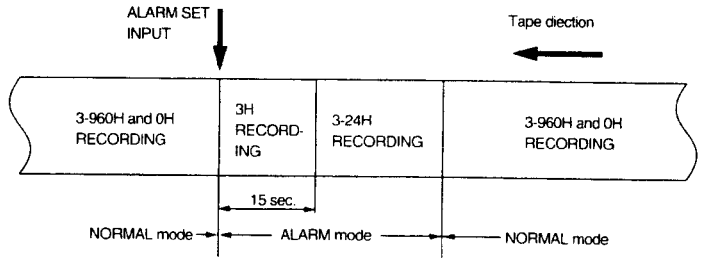
The Elapsed time of recording and playback is stored in memory. The digital display is used as guideline for exchange of the head. Press the DISPLAY/SET button to show the Elapsed time display.

- The elapsed time is counted up to 10,000 hours.

<ELAPSED TIME> 1H

ALARM RECORDING

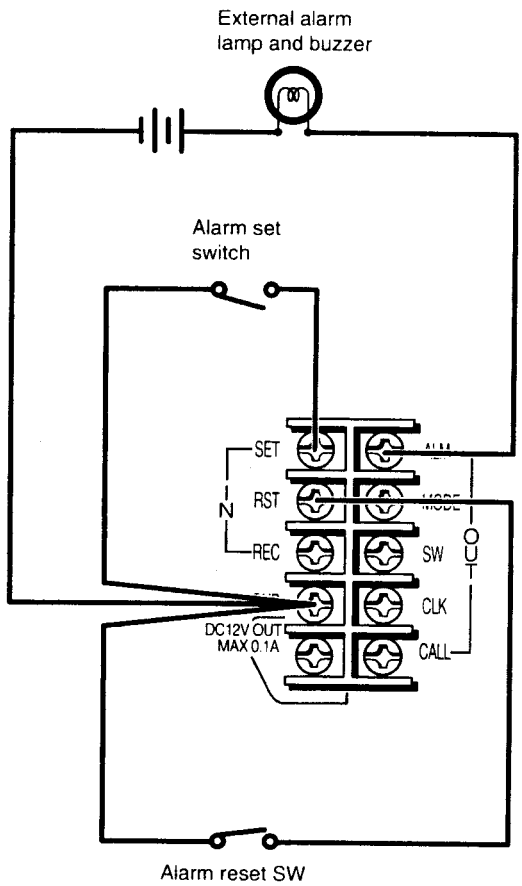
IT IS POSSIBLE TO SWITCH FROM ALL RECORDING MODES TO THE 3-24H RECORDING MODE BY APPLYING AN ALARM SIGNAL TO THE SET TERMINAL ON THE REAR PANEL.



- It is possible to switch to the alarm mode (3-24H) and record the status in detail by applying the set signal from the alarm sensor during recording in the NORMAL mode (3-960H and 0H).

- The index signal is automatically recorded when alarm recording begins.
- To record the index signal, the first 15 seconds of the alarm recording mode are in the 3H mode.
- During recording the index signal, the next SET signal will not be received.

ALARM RECORDING CONNECTION



- The alarm can be confirmed from a distance by connecting a power source to a lamp or buzzer and to the ALM OUT terminal.

- If the "ALARM REC DURATION" of the user selection display is set to "MAN 1", alarm recording continues until the alarm reset switch is switched on.
- If the "ALARM REC DURATION" of the user selection display is set to "MAN 2", alarm recording continues until the alarm set switch is switched off.

CAUTION:

- External time clock adjustment functions if a signal is applied to the RST (RESET) IN terminal on the rear panel when the "ALARM REC DURATION" of the user selection display is set to other than "MAN 1".

SET THE ALARM RECORDING

You must set the alarm recording state, before executing alarm recording.

■ SETTING THE ALARM RECORDING TIME
Set the recording time mode for alarm recording. (3H-24H mode)

■ SETTING THE ALARM RECORDING PERIOD
The period during which alarm recording is to be executed when the alarm signal is entered. (15 seconds to 10 minutes and manual (MAN 1 or 2)).
Recording is continued until the entry of the signal in the RST IN terminal when the "ALARM REC DURATION" of the user selection display is set to "MAN1". When the "ALARM REC DURATION" is set to "MAN 2", alarm recording is continued during the entry of the signal in the SET IN terminal.

<USER SELECTION 1>
ALARM REC MODE 3H
ALARM REC DURATION 1M

■ During alarm recording, the alarm recording count will automatically be displayed.
- The Alarm recording count display counts alarms from 0000 to 9999 and then is reset to 0000 and continues counting.
- Press the CLEAR button when the alarm recording list/elapsed time is displayed, the alarm recording count display will then be reset.

NOTE:
- If the set signal is applied during alarm recording, a new alarm recording will start at the new time.
- Alarm recording will be continued during the alarm time which has been set even if the timer recording end time is reached.
- Alarm recording is released when the tape end is reached.
- The alarm indicator flashes during alarm recording and lights up when the alarm recording is finished.
- When the alarm recording is finished, the VCR resumes previous mode.

EMERGENCY RECORDING

This function automatically starts alarm recording when the set signal is applied, even when the VCR is not recording.
If the "EMERGENCY REC" of the user selection display is set to "ON", alarm recording starts automatically when the signal is applied to the SET IN terminal in recording mode and in stop mode (including timer recording stand-by mode). (If it is set to "OFF", alarm recording is started only when the VCR is in recording mode.)

- "EMGCY" lights up on the fluorescent display when the "EMERGENCY REC" of the user selection display is set to "ON".

ALARM RECORD TIME DISPLAY

The Alarm record start time is stored in memory so it is possible to confirm the start times while recording. Press the DISPLAY/SET button, and the alarm recording list/elapsed time display will appear on the screen.
- The Alarm record start times will be stored in memory for up to 3 alarms. For more than that, the first and last two alarms start times will be displayed.
- Pressing the CLEAR button with the alarm recording list/elapsed time display appearing on the screen will erase the Alarm record time.

<ALARM LIST>
0001 10-02-95 06:30
0002 15-02-95 23:30
0003 28-02-95 17:30

EXTERNAL TIME CLOCK ADJUSTMENT

If the "ALARM REC DURATION" of the user selection display is set to other than "MAN 1", the on-screen clock can be reset to the nearest hour, by applying a signal to the RST IN terminal. For example, if the current time is 11:29:59 it will be reset to 11:00:00, and if the current time is 11:30:00 it will be reset to 12:00:00.

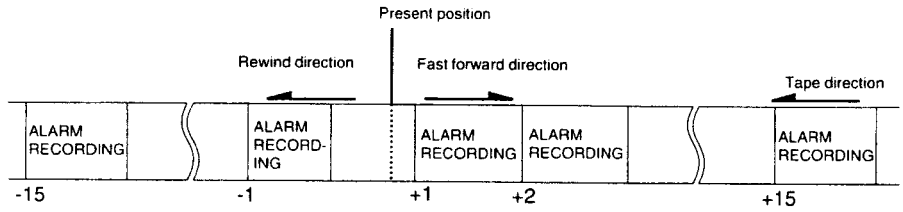
LOCATING THE START OF ALARM RECORDED PROGRAMMES

This machine automatically inserts an index signal at the beginning of each ALARM RECORDING allowing the start of each alarm to be located.

■ INDEX SEARCH

While fast forwarding or rewinding the machine will search for index signals. Where an index signal is set the machine will stop and begin still playback.

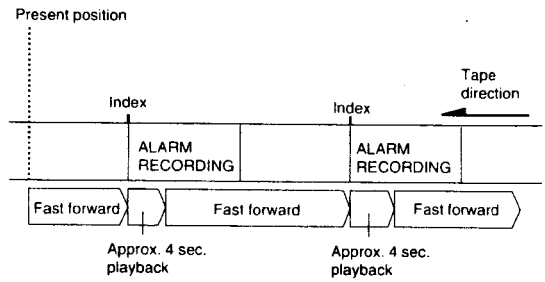
1 Press the INDEX SEARCH button to set the number of times to correspond to the alarm index you desire to locate. (1 through 15)
(On the fluorescent display "INDX" will be illuminated and the number indication will be illuminated.)
2 Press the FF button or the REW button.
(The programme indication number will decrease one by one as each index signal goes by.)



■ SKIP SEARCH

This allows you to view about 3 seconds of the beginning of each ALARM RECORDING to find a particular alarm recording.

1 Press the SKIP SEARCH button.
(On the display "SKIP" will be illuminated.)
2 Press the FF button or the REW button.



Until the index signal is located the machine will fast advance (or rewind). When an index signal is located the machine will play back (at 3H mode) for about 3 seconds of the programme. This process will be repeated until the end or the beginning of the tape is reached.

- When the desired programme is located, press the PLAY button.
- To stop SKIP SEARCH, press the STOP button.

NOTE:

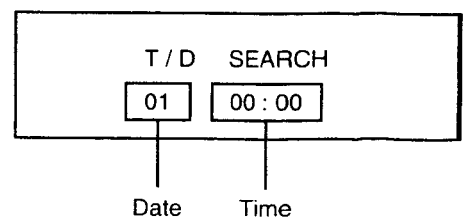
- If alarm recording quality is poor, the VCR may fail to locate the index signal during index and skip search.

TIME/DATE SEARCH

This function is to locate the desired part of a tape by setting the date and time with the on-screen display for time/date search on the monitor.

1 Press the TIME SEARCH button.
(On the monitor "T/D SEARCH" display will appear.)
2 Press the START/END button.
("Date" display flashes.)
3 Setting the date and time
- Press the DISPLAY/SET buttons to set the "Date" display.
- Press the RIGHT POSITION/SHIFT button to flash the "Time" display.
- Press the DISPLAY/SET buttons to set the "Time" display.

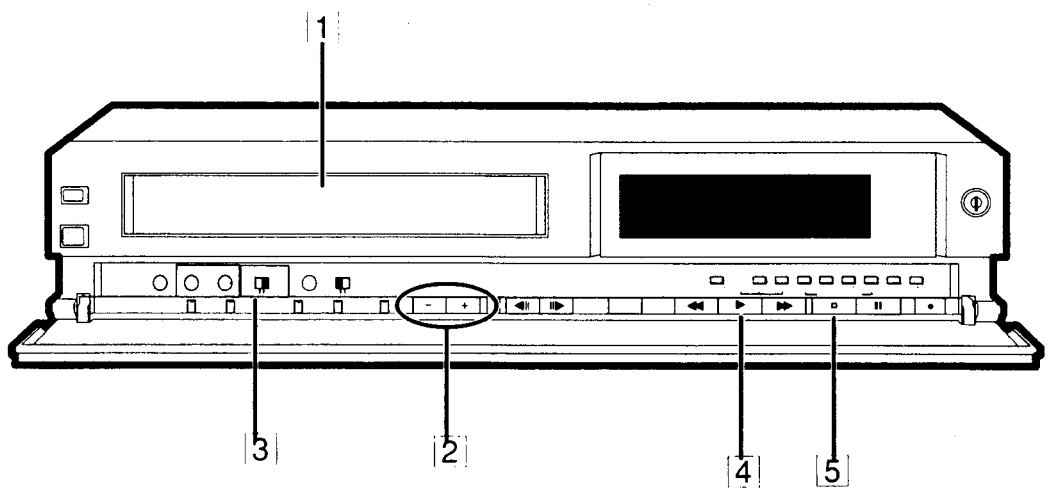
4 Press the START/END button.
(Flashing display stops.)
5 Press the FF button or the REW button.



NOTE:

- Time/date search function is not available for a tape recorded by any other VCR than this model.
- If recording quality is poor, the VCR may fail to locate the desired part of the tape during time/date search.
- Time/date search function may not be available on a tape with alarm recording.

PLAYBACK



1 Load a pre-recorded tape.
AUTO PLAY:
If a cassette with the erasure prevention tab removed is loaded the unit automatically switches to play mode and playback begins.
2 Press the REC/PLAY MODE buttons to select the desired playback mode.
• To select the special hour mode, set the hour mode in the user selection 3 display in advance.
3 Select the VIDEO switch setting according to the type of video signal to be played back, COLOR (COLOUR) or B/W.
4 Press the PLAY button to start playback.
5 Press the STOP button to stop playback.

■ Rewind — with VCR in stop mode.
Press the REW button to rewind the tape.

■ Fast forward — with VCR in stop mode.
Press the FF button to run the tape forward at fast speed.

■ AUDIO PLAYBACK

Playback mode	3H	L12H	12H	L24H	24H	48-960H and 0H
Audio playback	Available	Available	Not available	Available	Not available	Not available
Picture quality	Good	Vibrating	Less vibrating	Vibrating	Less vibrating	Less vibrating

The modes with the letter "L" (L12H and L24H) are for audio recording and playback on the linear track.

NOTE:
- There is normal sound playback only when the tape recorded in the 3H, L12H, or L24H mode is played back in the respective modes.
- If in a PLAYBACK mode higher than the one in which it was recorded, it will be in slow motion, and if in a low PLAYBACK mode, it will be fast.
- The picture may move up/down or noise may occur when playback is in the L12H or L24H mode even though the tape recorded in L12H or L24H mode.
- The audio playback quality may be poor in L12H and L24H modes.

■ PLAYBACK MODE

When the REC/PLAY MODE button is pressed, the playback mode is switched in the order of 0H → 3H → L12H → 12H → L24H → 24H → 48H → 72H → 120H → 168H → 240H → 360H → 480H → 960H → 0H → .... (if the special hour mode is set to "960H" in the user selection display.)

■ When tape end is reached

The following functions are automatically engaged when tape end is reached during playback or fast forward.

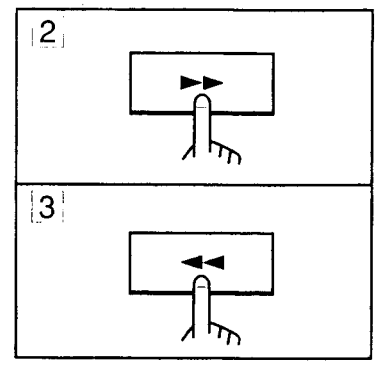
Tape End Selected	"REPEAT" or "ALARM•PROT"	"STOP" or "REWIND"
Playback	The tape automatically rewinds to the Beginnning and Stops.	Stop
Fast forward	Stop	Stop

SPECIAL EFFECTS PLAYBACK

THE AUDIO OUTPUT IS MUTED DURING SPECIAL EFFECTS PLAYBACK.

SPEED SEARCH

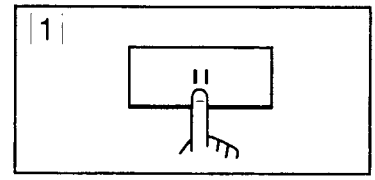
1 Press the PLAY button to begin playback.
2 Press the FF button to operate forward speed search.
Press the PLAY button to restore normal playback.
3 Press the REW button to operate reverse speed search.
Press the PLAY button to restore normal playback.



NOTE:
- Noise bars will appear on the picture during speed search operation.
- The noise bars may appear depending on recording condition.

STILL

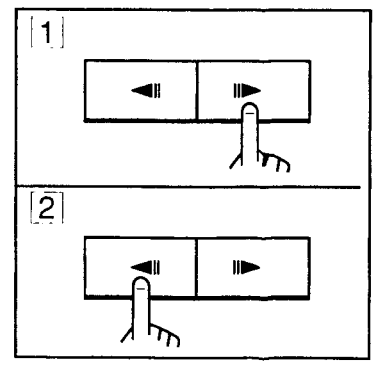
1 Press the PAUSE/STILL button during playback to obtain a still field.
Pressing the button again restores normal playback.



NOTE:
- The still field is released after 5 minutes to prevent damage to the tape.
- If noise appears in the picture during still field playback, change to 24H mode playback and adjust the TRACKING (SLOW) control to achieve the best picture.

FIELD BY FIELD PLAYBACK

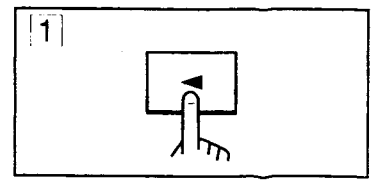
1 In still field, press the FORWARD FRAME SHIFT button and release to advance one field at a time.
2 In still field, press the REVERSE FRAME SHIFT button and release for reverse field-by-field playback.



NOTE:
- When switching direction, noise bars may appear on the picture.
- A few noise bars or vertical movement may appear during frame shift playback.

REVERSE PLAYBACK

1 Press the REVERSE PLAY button to obtain reverse playback.

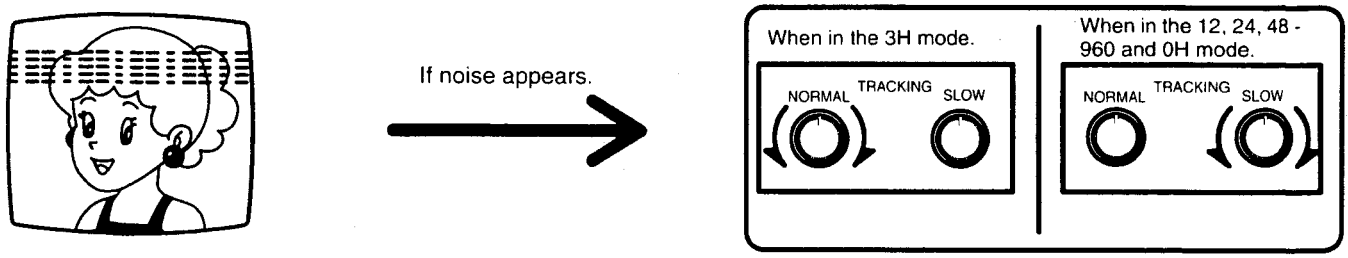


NOTE:
- Noise bars will appear on the picture during reverse playback operation.

ADJUSTMENT DURING PLAYBACK

TRACKING ADJUSTMENT

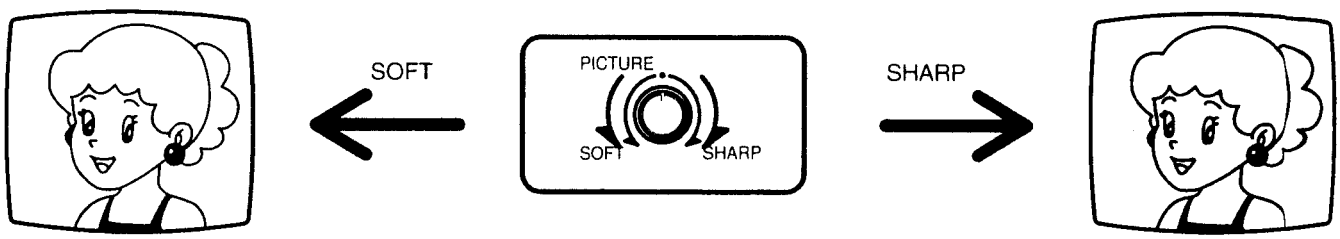
If noise appears in the picture during playback or reverse playback, adjust the TRACKING control to achieve the best picture.



NOTE:
- Remember to return the controls to their click-stop position after use.
- When in the reverse playback mode, a little noise may appear on the screen.
- A little noise during playback in L12H or L24H mode cannot be corrected with the TRACKING control.

PICTURE QUALITY ADJUSTMENT

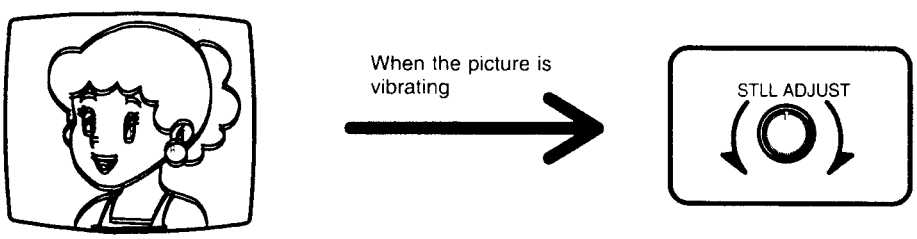
This control allows you to adjust the playback picture so that the outline is sharper or softer.



NOTE:
- This control is only effective during playback.

STILL ADJUSTMENT

When watching a still or slow-motion playback, the picture may vibrate at the top and bottom. In this case, rotate the STILL ADJUST control to reduce or eliminate the picture vibration.



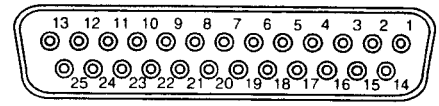
NOTE:
- Side to side vibration cannot be corrected with the STILL ADJUST control.
- The vertical vibration in L12H or L24H mode cannot be corrected with the STILL ADJUST control.

USING WITH THE PERSONAL COMPUTER

As HS-S5600E(RS)A and HS-S5600E(BRS)A have a RS-232C connector, you can remote control these VCRs using the personal computer equipped with the RS-232C connector. Therefore, this item is applied to HS-S5600E(RS)A and HS-S5600E(BRS)A only.

PHISICAL PROTOCOL OF RS-232C

Pin No.	Signal line names	Meanings	Directions (from VCR side)
1	FG	Protective ground	---
2	SD	Transmitted data	Output
3	RD	Received data	Input
4	RS	Request to send	Output
5	CS	Clear to send	Input
6	DR	Data set ready	Input
7	SG	Signal ground	---
8	CD	Received line signal detector	Input
20	ER	Data terminal ready	Output



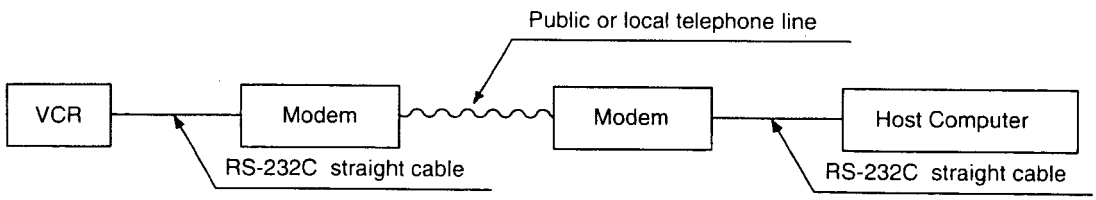
DATA LINK

Teletype Procedures :

Transmission rate	1200 bps
Data bit length	8 bits
Stop bit length	1 bit
Parity bit	Nil
Transmission line feed	Nil
X control	Nil
S parameter	Nil
CS-RS hand-shake	With

CONNECTIONS

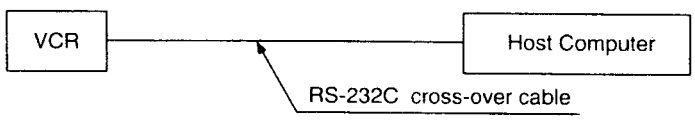
❶ When connecting through modem:



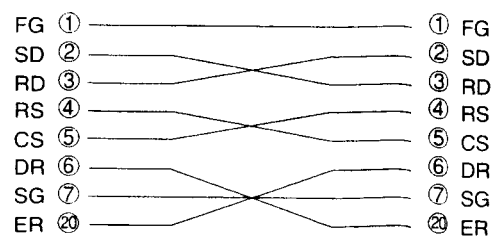
NOTE:

- Connect VCR and modem through the RS-232C straight cable. The cable is available from your dealer.

❷ When controlling VCR directly without use of modem:

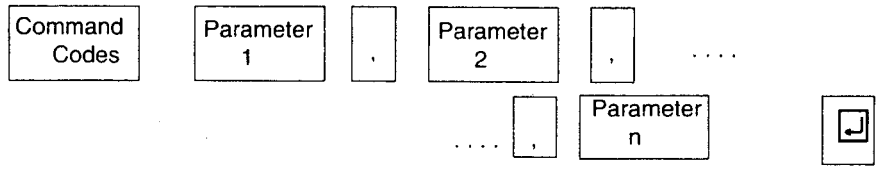


- For connection, use RS-232C cross-over cable as shown right. The cable is available from your dealer.



(1) Command: Commanding codes from outside to the VCR. (Refer to pages 27-30)

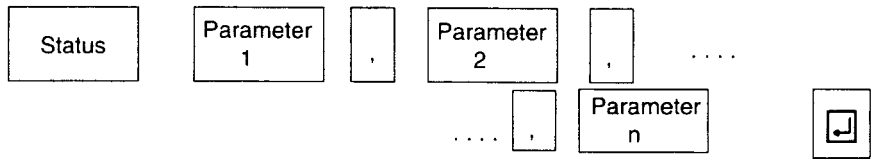
Format:



- There are also commanding codes which do not accompany any parameter. "↵", which indicates carriage return code (0DH), must always be provided.

(2) Status : Response codes from the VCR to outside. (Refer to pages 27-30)

Format:



- There are also statuses which do not accompany any parameter.

[Example 1] Switch ON VCR.

Command	Status	Meaning
PW1 ↵		Power ON command
	RC ↵	Command received
	EX ↵	Command carried out

[Example 2] Timer programme No. 2 is set (and confirmed) in L24-hour recording mode with 8:40 starting and 17:25 ending on Sunday.

Command	Status	Meaning
PG2, 0, 08, 40, 17, 25, L24 ↵		Timer programme setting
	RC ↵	Command received
	EX ↵	Command carried out
PM2 ↵		Setting confirmation
	RC ↵	Command received
	MP2, 0, 08, 40, 17, 25, L24 ↵	Contents of timer program

[Example 3] Recording was attempted, but could not because the tape tab was broken.

Command	Status	Meaning
RC ↵		Command for recording
	RC ↵	Command received
	ER02↵	Failed recording due to broken tape tab

COMMANDS AND RESPONDED FUNCTION AND STATUS

NO.	Commands	Functions	Statuses, when normal execute	Meaning of statuses
1	PW ↵	Power ON/OFF	RC↵EX↵	Command received and carried out
2	PW0 ↵	Power OFF	↑	↑
3	PW1 ↵	Power ON	↑	↑
4	EJ ↵	EJECT	↑	↑
5	SP↵	STOP	↑	↑
6	PB↵	PB	↑	↑
7	RP↵	RPB	↑	↑
8	FF ↵	FF	↑	↑
9	RW ↵	REW	↑	↑
10	RC ↵	REC	↑	↑
11	CM ↵	Counter memory stop	RC ↵ EX0 ↵ (after completed)	Command received Command carried out
12	PU ↵	PAUSE ON/OFF	RC↵EX↵	Command received and carried out
13	PU0↵	PAUSE OFF	↑	↑
14	PU1↵	PAUSE ON	↑	↑
15	FA ↵	Forward-advance (PB-PAUSE only)	↑	↑
16	RA ↵	Reverse-advance (PB-PAUSE only)	↑	↑
17	SF ↵	Skip FF search	↑	↑
18	SR↵	Skip REW search	↑	↑
19	IF***↵	Index address FF search up to (***=001～999)	RC ↵ EX1↵(after completed)	Command received Command carried out
20	IR***↵	Index address REW search up to (***=001～999)	↑	↑
21	IN ↵	Enquiry about current index No. (index FF, REW search only)	RC↵ID***↵	Index No. is ***=001～999
22	TF**1, **2, **3↵	Time FF search **1:Day, **2:Hour, **3:Minute	RC↵ EX2↵(after completed)	Command received and carried out
23	TB**1, **2, **3↵	Time REW search **1:Day, **2:Hour, **3:Minute	↑	↑
24	TS?↵	Enquiry about current time search setting	RC↵TS**1,**2,**3↵	**1:Day, **2:Hour, **3Minute
25	TR↵	Timer REC ON/OFF	RC↵EX↵	Command received and carried out
26	TR0↵	Timer REC OFF	↑	↑
27	TR1↵	Timer REC ON	↑	↑
28	TP↵	Enquiry about current executing timer program No.	RC↵TN*↵	Timer program No. is *=1～8 (Note)ER08, when not timer REC
29	SS↵	Enquiry about current VCR status	RC↵ST00↵	Power off, cassette in
			RC↵ST01↵	Power off, cassette out
			RC↵ST02↵	Power on, cassette in
			RC↵ST03↵	Power on, cassette out
			RC↵ST04↵	FF underway
			RC↵ST05↵	REW underway
			RC↵ST06↵	REC underway
			RC↵ST07↵	REC-PAUSE underway
			RC↵ST08↵	PB underway
			RC↵ST09↵	RPB underway
			RC↵ST10↵	FS underway
			RC↵ST11↵	RS underway
			RC↵ST12↵	STILL underway
			RC↵ST13↵	Counter memory search underway
			RC↵ST14↵	Skip FF search underway
			RC↵ST15↵	Skip REW search underway
			RC↵ST16↵	PB during skip FF/REW search
			RC↵ST17↵	Index FF search underway
			RC↵ST18↵	Index REW search underway
			RC↵ST19↵	REW during repeat REC
			RC↵ST20↵	Alarm REC underway
			RC↵ST21↵	Timer REC underway
			RC↵ST22↵	Reserve of timer REC
			RC↵ST23↵	Timer reserve error underway
			RC↵ST24↵	Reserve of time search underway
			RC↵ST25↵	Time FF search underway
			RC↵ST26↵	Time REW search underway
			RC↵ST27↵	Time FS search underway
			RC↵ST28↵	Time PB search underway
			RC↵ST29↵	REC check underway
			RC↵ST30↵	Index writing underway
			RC↵ST31↵	Time date writing underway
			RC↵ST32↵	Oneshot REC underway
			RC↵ST33↵	Forward-advance underway
			RC↵ST34↵	Reverse advance underway

NO.	Commands	Functions	Statuses, when normal execute	Meaning of statuses
30	LK ↵	Lock A/B mode switch-over	RC↵EX↵	Command received and carried out
31	LK0 ↵	Switch over to lock A mode	↑	↑
32	LK1 ↵	Switch over to lock B mode	↑	↑
33	LO* ↵	Lock ON/OFF *:0=Off, 1=ON	↑	↑
34	LM ↵	Enquiry about current lock status & lock mode	RC↵LM*↵	*: (0=Lock off & A-mode 1=Lock off & B-mode 2=Lock on & A-mode 3=Lock on & B-mode)
35	HD*↵	PB head switch-over *: 0=NORMAL, 1=L/L, 2=R/R, 3=AUTO	RC↵EX↵	Command received and carried out
36	HD?↵	Enquiry about PB head switch-over	RC↵HD*↵	*: 0=NORMAL, 1=L/L, 2=R/R, 3=AUTO
37	CR↵	Count reset	RC↵EX↵	Command received and carried out
38	CT↵	Enquiry about current count display value	RC↵CT*****↵	*****=00000~99999
40	MC***↵	Switch over time mode to (***=003, 012,L12, 024, L24, 048, 060, 072, 096, 120, 144, 168, 204, 240, 288, 336, 360, 480, 600, 720, 960, 000)	RC↵EX↵	Command received and carried out
41	MD↵	Enquiry about current time mode	RC↵MD***↵	(***=003, 012,L12, 024, L24, 048, 060, 072, 096, 120, 144, 168, 204, 240, 288, 336, 360, 480, 600, 720, 960, 000)
42	SH***↵	Switch over special time mode to (***=060, 096, 144, 204, 288, 336, 600, 720, 960)	RC↵EX↵	Command received and carried out
43	SH?↵	Enquiry about current special time mode	RC↵SH***↵	(***=060, 096, 144, 204, 288, 336, 600, 720, 960)
44	DP↵	Next screen page switch-over	RC↵EX↵	Command received and carried out
45	DP*↵	Switch-over screen page to (designation by a numeral) *=1~8(page number)	↑	↑
46	PI↵	Enquiry about current screen page	RC↵ON*1*2↵	*1 : Page number=1~8 *2 : Setting completed=0, Off setting=1
47	SD**1,**2,**3↵	Current date setting **1 : Day, **2 : Month, **3 : Year	RC↵EX↵	Command received and carried out
48	DT↵	Enquiry about current date	RC↵TD**1,**2,**3,*4↵	**1~**3(same as item 47) *4 :Day of the week 0=SUN, 1=MON, 2=TUE, 3=WED, 4=THU, 5=FRI, 6=SAT
49	SC**1,**2↵	Current time setting **1:Hour, **2:Minute	RC↵EX↵	Command received and carried out
50	TM↵	Enquiry about current time	RC↵TI**1,**2,**3↵	**1 : Hour, **2 : Minute, **3 : Second
51	WT*↵	Stop watch operation *1 : 0=Clear, 1=Start, 2=Stop	RC↵EX↵	Command received and carried out
52	WT?↵	Enquiry about stop watch time	RC↵WT**1,**2,**3↵	**1 : Hour, **2 : Minute, **3 : Second
53	TD↵	Enquiry about power loss mark	RC↵MK*↵	*: 0=Not display, 1=On display
54	CN↵	Enquiry about display camera No.	RC↵CS**↵	**00~16(Note) ER08(when no camera No. or no connection)
55	PS**1,**2↵	Move date display position **1 :(Horizontal) When camera No. is not indicated: 01~14=Display mode 1, Character size large 02~28=Display mode 1, Character size small 01~19=Display mode 2,3, Character size large 02~31=Display mode 2,3, Character size small When camera No. is indicated: 01~15=Display mode 2,3, Character size large 02~29=Display mode 2,3, Character size small **2: (Vertical) 02~31=Display mode 1, 02~29=Display mode 2,3,	RC↵EX↵	Command received and carried out
56	LC↵	Enquiry about date display position	RC↵LT**1,**2↵	**1,**2(=same as item 55)

NO.	Commands	Functions	Statuses, when normal execute	Meaning of statuses
57	PG*1,*2,**3,**4,**5,**6,***7 ↵	Timer programme setting *1:Programme No.=1～8 *2:Day of the week(0=SUN,1=MON, 2=TUE, 3=WED, 4=THU,5=FRI,6=SAT,7=DAY,8=SPL) **3:Rec starting hour=00～23 **4:Rec starting minute=00～59 **5:REC ending hour=00～23 **6:REC ending minute=00～59 ***7:REC time mode=003, L12, L24, 048, 060, 072, 096, 120, 144, 168, 204, 240, 288, 336, 360, 480, 600, 720, 960, 000, SKP	RC↵EX↵	Command received and carried out (Note) Cannot set timer programme No., which is already set. (ER08) Clear timer programme contents by the command "CA*" and set them again.
58	PM*↵	Enquiry about setting contents of timer programme No. (*=1～8)	RC↵MP*1,*2, **3, **4, **5, **6, ***7↵	*1～***7(=Same as item 57)
59	CA*↵	Clear contents of timer programme No. (*=1～8)	RC↵EX↵	Command received and carried out
60	DW*1,*2↵	Special setting of day of the week *1:Setting on (0-6) *2:Setting off (0-6) 0=SUN, 1=MON, 2=TUE, 3=WED, 4=THU, 5=FRI, 6=SAT	RC↵EX↵ (Cannot accept this command when *1 and *2 are the same number)	↑
61	DW?↵	Enquiry about special setting of day of the week	RC↵DW*1, *2↵	*1:Setting on (0-6) *2:Setting off (0-6) 0=SUN, 1=MON, 2=TUE, 3=WED, 4=THU, 5=FRI, 6=SAT
62	AM**↵	Alarm mode setting (**=03, 12, 24)	RC↵ EX↵	Command received and carried out
63	AS1↵	Enquire of alarm mode setting	RC↵AM**↵	**=03, 12, 24
64	AD*↵	Alarm REC duration setting *:MAN1=0, MAN2=1, 15s=2, 30s=3, 45s=4, 1m=5, 2m=6, 5m=7, 10m=8	RC↵ EX↵	Command received and carried out
65	AS0↵	Enquiry about alarm time setting	RC↵AP*↵	*(=Same as item 64)
66	EM↵	Emergency REC ON/OFF	RC↵EX↵	Command received and carried out
67	EM0↵	Emergency REC OFF	↑	↑
68	EM1↵	Emergency REC ON	↑	↑
69	AS2↵	Enquiry about emergency REC setting	RC↵EG*↵	*:0=OFF, 1=ON
70	TE*↵	Tape end movement setting *:STOP=0, REPEAT=1, REWIND=2, ALARM PROT(protect)=3	RC↵EX↵	Command received and carried out
71	FS0↵	Enquiry about tape end movement set	RC↵TE*↵	*(=Same as item70)
72	DM*↵	Display mode setting (*=(1～5))	RC↵EX↵	Command received and carried out
73	DM?↵	Enquiry about display mode setting	RC↵DM*↵	* =(1～5)
74	CH0↵	Set date character display size "SMALL"	RC↵EX↵	Command received and carried out
75	CH1↵	Set date character display size "LARGE"	↑	Command received and carried out
76	FS1↵	Enquiry about date character display size	RC↵CZ*↵	* : 0=SMALL, 1=LARGE
77	CO*1,**2↵	Clock out setting *1:Rec=0, T/LREC=1 **2:01, 02, 03, 04, 05, 10, 15, 20, 25, 30, 50, 60, 00(output by field)	RC↵EX↵	Command received and carried out
78	R0↵	Enquiry about clock out setting	RC↵CD*1,**2↵	*1, **2(=Same as item 77)
79	MO*↵	Mode out setting *:REC=0, PB=1, POWER=2, TAPE=3, EMPTY=4	RC↵EX↵	Command received and carried out
80	RM↵	Enquiry about clock out setting	RC↵MR*↵	*(=same as item 79)
82	CU?↵	Enquiry about CALL OUT setting	RC↵CU*↵	* : 0=OFF, 1=ON
85	ST*↵	SET MODE ON/OFF setting *:0=OFF	RC↵EX↵	Command received and carried out
86	BZ*↵	Buzzer setting *: KEY=0, WRNG=1, EMPTY=2, OFF=3	↑	↑
87	BR*↵	Buzzer OFF setting * : 0=OFF	↑	↑
88	FS2↵	Enquiry about buzzer setting	RC↵BZ*↵	*(=Same as item 86)
89	BP↵	Enquiry about buzzer status	RC↵SW*↵	* : 0=OFF (not ring), 1=ON (ring)
90	OS**↵	One shot field setting ** : 01, 02, 03, 04, 05, 10, 20, 30	RC↵EX↵	Command received and carried out
91	OF↵	Enquiry about one shot field set	RC↵SD**↵	**(=Same as item 90)
92	OI*↵	Set the one shot REC duration *: 0=SHOT, 1=10S, 2=15S, 3=30S, 4=45S, 5=1M, 6=2M, 7=3M	RC↵EX↵	Command received and carried out
93	OI?↵	Enquiry about one shot REC duration	RC↵OI*↵	*(=Same as item 92)

NO.	Commands	Functions	Statuses, when normal execute	Meaning of statuses
94	AN↵	Enquiry about current alarm REC. No.	RC↵AN****↵	****(=0000~9999)
95	AT*↵	Enquiry about alarm REC list report *:0=about the alarm REC No. 1 1=about the second alarm REC from the last one 2=about the last alarm REC	RC↵ AT**1, **2, **3, **4, **5↵	**1 : Day, **2 : Month, **3 : Year, **4 : Hour, **5 : Minute
96	CA↵	Clear all alarm REC list contents	RC↵EX↵	Command received and carried out
97	PN↵	Clear current power loss list No.	RC↵PN**↵	**(=00~99)
98	PT*↵	Enquiry about power loss list report *:0=about the first poser loss 1=about the second power loss from the last one 2=about the last power loss	RC↵ PT**1, **2, **3, **4, **5↵	**1 : Day, **2 : Month, **3 : Year, **4 : Hour, **5 : Minute
99	PC↵	Clear all power loss list contents	RC↵EX↵	Command received and carried out
100	MI↵	Initialization of the setting	↑	↑
101	HM?↵	Enquiry about timer under used	RC↵HM*****↵	*****(=Hour)
102	SV?↵	Enquiry about S-VHS information	RC↵SV*↵	*: 0=Normal VHS, 1=S-VHS
105	CA0↵	Clear ER05	RC↵EX↵	Command received and carried out

Error codes

No.	Errors	Meaning of error
1	ER00↵	No power supply
2	ER01↵	No cassette loaded
3	ER02↵	Broken tape tab (Cannot REC)
4	ER03↵	Tape start
5	ER04↵	Tape end
6	ER05↵	A trouble caused on the VCR
7	ER06↵	Present time or timer program not yet set
8	ER07↵	Alarm REC underway (Unable to set the screen)
9	ER08↵	Unfesible
10	ER10↵	Incorrect command
11	ER11↵	Incorrect parameter
12	ER12↵	Overflown receiving buffer
13	ER13↵	Data not received correctly

SAMPLE PROGRAMME FOR USING

```
1000    ON STOP GOSUB 9010 :STOP ON
1010    '*RS-232C PRE-SETTING
1030    OPEN "COM1 : N81NN" AS#1
1040    '*KEY BUFFER CLEAR
1050    FOR I=1 TO 10 : A$=INKEY$ : NEXT I
1060    S%=1
2000    '*INPUT FROM KEY BOARD
2010    STORE INPUT DATA FROM KEY BOARD TO SD$ AND DISPLAY TO SCREEN
2020    A$=INKEY$
2030    IF A$=""THEN 3020
2040    IF S%=0 THEN 2070
2050    S%=0 : SD$=""
2060    IF POS(I) < > 0 THEN PRINT
2070    I=ASC(A$)
2080    'STORE DATA TO SD$ ONLY WHEN ASCII CODE FROM 44 (SHOWS "","") TO 90 (SHOWS "Z") INPUTTED
2090    IF I <44 OR I> 90  THEN 2120
2100    PRINT A$; : SD$=SD$+A$ : GOTO2020
2110    'CANCEL THE PREVIOUS CHARACTER WHEN BACK SPACE, "←" OR DELETE KEY IS PRESSED
2120    IF < >8 AND I < >29 AND I < >127 THEN 2190
2130    IF LEN(SDD$)=0 THEN2020
2140    SD$=LEFT$(SD$, LEN(SD$)-1)
2150    I-POS(I) : J=CSRLIN : I=I-1 : IFI=-1 THEN I=39 : J=J-1
2160    LOCATE I,J : PRINT " "; :LOCATE I,J : GOTO 2020
2170    '*TRANSMIT COMMANDS TO THE VCR
2180    'SEND SD$ TO RS-232C PORT WHEN CARRIAGE RETURN IS PRESSED
2190    IF I < >13 THEN 2020
2200    PRINT #1,SD$ : PRINT CHR$(13);"send=";SD$
2210    SD$="" : GOTO 2020
3000    '*RECEIVE FROM THE VCR
3010    'DISPLAY DATA SENT FROM RS-232C PORT ON THE SCREEN
3020    IF LOC(1)=0 THEN 2020
3030    IF S%=1 THEN 3070
3040    DURING INPUTTING FROM KEY BOARD, THE INPUTTED DATA SD$ IS CANCELLED
3050    IF POS(1) <>0 THEN PRINT
3060    S%=1 : PRINT" recive=";
3070    A$=INPUT$(1, #1)
3080    'CARRIAGE RETURN CODE DISPLAYED AS "↵"
3090    IF ASC(A$)=13 THEN PRINT "↵"; : GOTO 3020
3100    PRINT A$; : GOTO 3020
9000    '*RS-232C PORT CLOSED WHEN STOP KEY IS PRESSED
9010    CLOSE : STOP
```

NOTE:

- This programme is for N-88 BASIC of the NEC personal computer. Please change this programme for your computer.
- Line 1030 means as shown below.

Data bit length	8 bits
Stop bit length	1 bit
Parity bit	Nil
XON/OFF control	Invalid

WARNING DISPLAY

SELF DIAGNOSTIC FUNCTION

This unit uses a self diagnostic function to detect an internal malfunction during recording. When a malfunction occurs in the unit during recording, a buzzer rings intermittently for 2 seconds if the "BUZZER" is set to "WRNG" in the user selection display, and the indication corresponding to each malfunction illuminates on the fluorescent display and/or on the screen. The type of malfunctions corresponding to the indication, and countermeasures, are given below.

• The buzzer stops when the CLEAR button inside the door is pressed.

Fluorescent display	Monitor	CAUSE	REMEDY	TO TURN OFF THE INDICATION
End	TAPE END	THE TAPE ENDS DURING RECORDING	Press the REW/REW SEARCH button or the EJECT button.	The indication on the fluorescent display and on the screen will turn off if the EJECT button or the REW/REW SEARCH button is pressed.
dEU	DEW	CONDENSATION (NOTE 1)	Wait with mains lead connected to outlet.	One hour after dew has evaporated, the indications on the fluorescent display and on the screen will turn off.
—	NO SIGNAL	LACK OF VIDEO SIGNAL INPUT (NOTE 2)	Check for loose connections.	When a video signal is restored or the record mode is cleared, the indication on the screen turns off.
CLog	—	CLOGGED HEAD	Eject the cassette and insert it again. If the indication "CLog" is still displayed, clean the video heads with a cleaning cassette tape. If the VCR still shows the indication after cleaning, contact your dealer.	When the recording mode is cleared, the indication on the fluorescent display turns off.
—	CHECK	TAPE/DECK TROUBLE	First, check the cassette. If there seems to be nothing wrong with the cassette, try the recording operation again. If the indication "CHECK" is still displayed, change the cassette with a new one and try the operation again. Otherwise, unplug the mains lead and contact your dealer.	

NOTE:

1. In the case of condensation, leaving the mains lead connected to an outlet will allow the internal heater to eliminate the condensation. For safety wait at least one hour after the indication has disappeared.

2. Lack of video input signal
   The indication "NO SIGNAL" appears when the VCR cannot get any video input signal during recording. The video input signal will not be obtained in case of any malfunction such as a broken video cable or POWER to the camera is turned off.

3. About Fouling of the head (CLOGGED HEAD)
   This unit's head cleaning function automatically removes any particles that may accumulate on the heads during 12-960H recording mode . If it cannot be entirely removed, a CLog indicator illuminates.

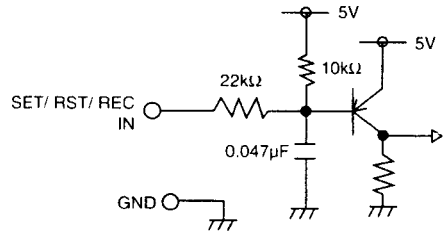
BEFORE CALLING FOR SERVICE

Symptom	Remedy
No power supplied to VCR.	• Is the LOCK switch set to ON? • Has the mains lead been disconnected from the AC outlet? • Is the TIMER REC indicator illuminated?
The VCR POWER is ON but unit does not operate.	• Is the LOCK switch set to ON? • Safety devices are operating. Press the RESET button on the rear panel using a ballpoint pen.
No picture is obtained on the MONITOR screen.	• Is the connecting cable properly connected, or is the cable defective?
No operation when any tape operation button is pressed.	• Is the LOCK switch set to ON? • Are "DEW" and "dEU" displayed on the screen and on the fluorescent display? • Is a cassette inserted?
The indications of dew condensation appear when the Mains Lead is disconnected from the AC outlet and then reconnected.	• Safety devices for condensation are on. • With the Mains Lead still connected, wait for about 1 hour after the indications have disappeared.
The presettings have been cancelled.	• Install the battery correctly. • Change the battery with a new one. Refer to "INSTALLING A CLOCK BATTERY" on page 5.
Power loss time is not listed, and/or a built-in clock does not function.	
Recording does not work.	• Is the LOCK switch set to ON? • Has the cassette's erasure prevention tab been broken off? • Has the tape run out?
No recording of audio.	• Have the REC/PLAY MODE buttons been selected to 3H, L12H, or L24H mode?
No recording of audio from AUDIO IN connector.	• Is the microphone connected to the MIC IN jack?
Recording cannot be stopped by pressing the STOP button.	• Is the LOCK switch set to ON? • Is the TIMER REC indicator illuminated?
Timer recording does not operate.	• Have the present time and recording time been set accurately?
No operation when PLAY button is pressed.	• Is the LOCK switch set to ON? • Has the tape run out? • Is a cassette inserted?
Noise in the picture during playback.	• Has the TRACKING control been adjusted?
The picture vibrates at the top and bottom when in still field mode.	• Has the STILL ADJUST control been adjusted?
Clear camera pictures during recording but during playback the picture is not clear.	• This symptom may occur when the recorder has been used for a long period of time. During this time, a deposit of oxide has built up on the video heads which must now be cleaned. Clean the video heads with a cleaning cassette tape. If the picture is still not clear, contact your dealer.

CONTROL INPUT/OUTPUT SIGNALS AND CIRCUITS

■ SET/ RST/ REC IN terminals (screw)

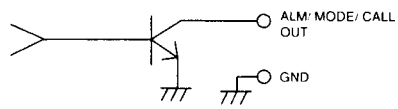
Active: When input terminals are short-circuited to GND or "Low" level voltage (0 - +1.6V) applied.
Time for active: 0.1 sec or over.
Non active: Open the input.



<Interface circuit inside the VCR>

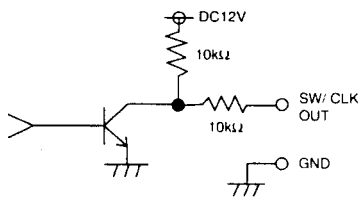
■ ALM/ MODE/ CALL OUT terminals (screw)

Active: "Low" Level voltage (0 - +0.4V) outputted; max. drive current 7mA DC.
Non active: Open; max. Voltage +24V DC



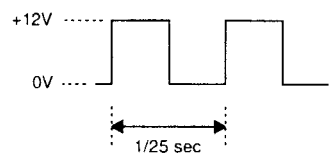
<Interface circuit inside the VCR>

■ SW/ CLK OUT terminals (screw)

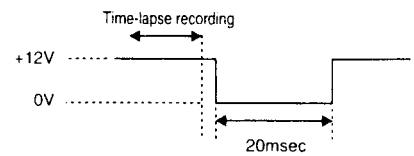


<Interface circuit inside the VCR>

SW OUT signal

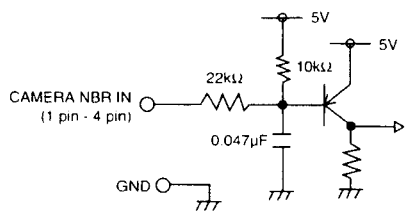


CLK OUT signal

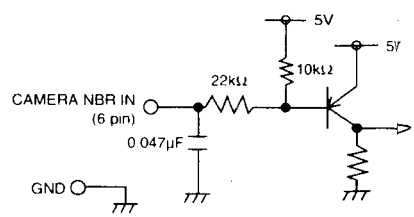


■ CAMERA NBR IN connector (7-pin DIN)

Active: When input terminals are short-circuited to GND or "Low" level voltage (0 - +1.6V) applied.
Time for active: 0.1 sec or over.
Non active: Open the input.



<Interface circuit inside the VCR>



<Interface circuit inside the VCR>

Input signal for each terminal of 7-pin DIN connector

		Camera number					
DIN terminal number	Input signal	1	2	.....	15	16	Not displayed
1	BINARY 1	1	○	.....	1	○	X
2	BINARY 2	○	1	.....	1	○	X
3	BINARY 4	○	○	.....	1	○	X
4	BINARY 8	○	○	.....	1	○	X
5	GND			.....			
6	ENABLE	1	1	.....	1	1	○
7	Vacant terminal			.....			

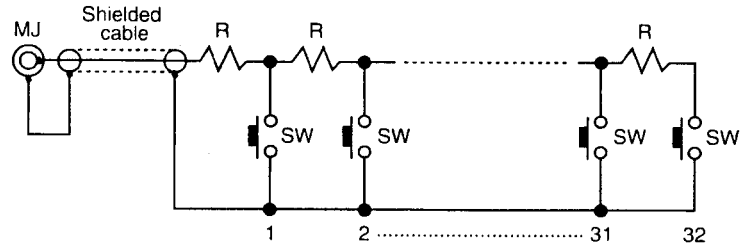
Active = 1, Non active = ○

- If the camera number is switched in 25Hz or 50Hz, the camera number display is fixed to "C00" (because it does not follow).

■ REMOTE jack (miniature jack)

Connecting a circuit as shown below, you can control the VCR remotely.

Circuit



1) Resistor R: Metal film resistor 1/4W 33kΩ ±1%, Temperature factor ±100ppm/°C.
2) Button switch: Momentary, ON resistor 200Ω or under.
3) Connector MJ: Miniature jack, 2.5mm in diameter, comply with JISC6560.

Operational conditions
1) Isolation resistor: 200MΩ or over (in connector MJ).
2) Floating capacity: 0.1μF or under (in connector MJ).
3) Environmental temperature: 5 - 40°C (common with VCR).
4) Relative temperature: 30 - 80% (common with VCR).

Remote control switch functions

Position	Function	Position	Function	Position	Function	Position	Function
1	STOP	9	3H	17	POWER SUPPLY	25	DOWN POSITION/SHIFT
2	RECORDING	10	L24H	18	REVERSE FRAME SHIFT	26	UP POSITION/SHIFT
3	PAUSE	11	48H	19	TIME SEARCH	27	CLEAR
4	PLAYBACK	12	72H	20	INDEX SEARCH	28	START/END
5	REVERSE PLAYBACK	13	120H	21	(–) DISPLAY/SET	29	(–) REC/PLAY MODE
6	FORWARD FRAME SHIFT	14	240H	22	(+) DISPLAY/SET	30	(+) REC/PLAY MODE
7	FAST FORWARD	15	480H	23	LEFT POSITION/SHIFT	31	SKIP SEARCH
8	REWIND	16	0H	24	RIGHT POSITION/SHIFT	32	TIMER RECORDING

SPECIFICATIONS

Tape format:	S-VHS/ VHS 1/2" width high-density video cassette tape.
Power source:	AC230V±10%, 50Hz.
Power consumption:	Approx.33watts.
Television System:	625 lines, 50 field PAL-type colour system.
Video Recording System:	4 rotary heads, azimuth helical scanning system.
Luminance Signal:	Frequency modulation recording.
Colour Signal:	Low frequency conversion, sub-carrier phase shift recording.
Audio Track:	1 track.

Tape Speed and Recording Time (with E-180 cassette):

Mode	Time	Speed	Video signal	Audio signal	Tape drive
3H	3hrs	23.39mm/sec	Continuous	Recordable	Continuous
L12H	15hrs	4.68mm/sec	Time lapse	Recordable	Continuous (Slow)
L24H	27hrs	2.60mm/sec	Time lapse	Recordable	Continuous (Slow)
48H	51hrs	0.34sec/field	Time lapse	Not recorded	Time lapse
60H	63hrs	0.42sec/field	Time lapse	Not recorded	Time lapse
72H	75hrs	0.50sec/field	Time lapse	Not recorded	Time lapse
96H	99hrs	0.66sec/field	Time lapse	Not recorded	Time lapse
120H	123hrs	0.82sec/field	Time lapse	Not recorded	Time lapse
144H	147hrs	0.98sec/field	Time lapse	Not recorded	Time lapse
168H	171hrs	1.14sec/field	Time lapse	Not recorded	Time lapse
204H	207hrs	1.38sec/field	Time lapse	Not recorded	Time lapse
240H	243hrs	1.62sec/field	Time lapse	Not recorded	Time lapse
288H	291hrs	1.94sec/field	Time lapse	Not recorded	Time lapse
336H	339hrs	2.26sec/field	Time lapse	Not recorded	Time lapse
360H	363hrs	2.42sec/field	Time lapse	Not recorded	Time lapse
480H	483hrs	3.22sec/field	Time lapse	Not recorded	Time lapse
600H	603hrs	4.02sec/field	Time lapse	Not recorded	Time lapse
720H	723hrs	4.82sec/field	Time lapse	Not recorded	Time lapse
960H	963hrs	6.42sec/field	Time lapse	Not recorded	Time lapse

Fast Forward/Rewind Time:	Approx. 3 min with E-180 cassette.
Heads-video:	4 rotary single crystal heads.
Audio/Control:	1 stationary head.
Erase:	1 full-track head.
Motors:	3 motors-drum/capstain direct drive system.
Video Input:	0.5 - 2.0 Vp-p, 75 ohm S-Connector (Y-signal) and BNC plug. 0.286 Vp-p, 75ohm S-Connector (C-signal)
Audio Input:	-8 dBs, 50k ohm, RCA plug.
Microphone Input:	-67 dBs, 600 ohm, mini mic jack.
Video Output:	1.0 Vp-p, 75 ohm S-Connector (Y-signal) and BNC plug. 0.286 Vp-p, 75ohm S-Connector (C-signal)
Audio Output:	-6 dBs, 1k ohm, RCA plug.
Horizontal Resolution:	More than 400 lines (S-VHS mode). More than 320 lines (Black & White). More than 240 lines (Colour).
Audio frequency response:	50 Hz- 10k Hz (3H mode).
Signal-to-Noise Ratio:	Video: better than 45 dB. Audio: better than 43 dB.
Operating Temperature:	41°F-104°F (5°C to 40°C).
Relative Humidity:	30 - 80(%).
Dimensions:	16.7(W)x14.2(D)x3.6(H)(in.). 425(W)x348(D)x91(H)(mm).
Weight:	6.6 kg.
Alarm Recording Time:	Timed: 15 sec/30 sec/45 sec/1 min./2 min./5 min./10 min. Manual 1: Until the alarm reset switch is switched on./ Manual 2: Until the alarm set switch is switched off.
Display format:	Day and present time/Stop watch/Display mode/Timer programme/User selection/Power failurelist/Alarm list/Elapsed time.
Display position:	In any position; 2 sizes.
Timer Programme:	Daily start and stop time for one week.
Battery Backup:	Lasts one year.
CONNECTORS	
SET Input:	Screw terminal for starting alarm recording.
RST Input:	Screw terminal for finishing alarm recording.
REC Input:	Screw terminal for starting recording or shot recording.
GND:	Screw terminal for ground.
ALM Output:	Screw terminal for output while alarm recording is under way.
MODE Output:	Screw terminal for indication of VCR selected mode.
SW Output:	Screw terminal to command video head switching.
CLK Output:	Screw terminal to command camera switching.
CALL Output:	Screw terminal for external warning device.
DC12V Output:	Screw terminal for 12V DC power supply.
REMOTE Jack:	Jack for connecting the remote control unit.
CAMERA NBR Input:	7-pin DIN for displaying camera number.
RS-232C interface(For HS-S5600E(RS)A and HS-S5600E(BRS)A only)	D-SUB 25 pin connector (Based on RS-232C standard)
Rating:	
ALM/MODE/CALL	Active: "Low" Level, max. Current 7mA DC. Non active: Open, max. Voltage +24V DC.
SET/RST/REC/ CAMERA NBR	Active: When terminals are short-circuited or "Low" level voltage applied. Non active: Open.
SW	Recording/Playback: A pulse synchronized the drum rotation.
CLK	Recording: A pulse of the frequency division ratio selected by user selection display.
DC 12V	DC 12V, max. 0.1A.

Weight and dimensions shown are approximate.
Design and specifications are subject to change without notice.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to
manufacturer's instructions.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig handtering.
Udskiftning ma kun ske med batteri
af samme fabrikat og tupe.
Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri-Eksplosjonsfare.
Ved utskifting benyttes kun batteri som
anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VOROITUS

Paristo voi räjähtää jos se on virheellisesti assennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

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